

THE SUBDIVISION OF THE EUPTEROTIDAE (LEPIDOPTERA)

BY

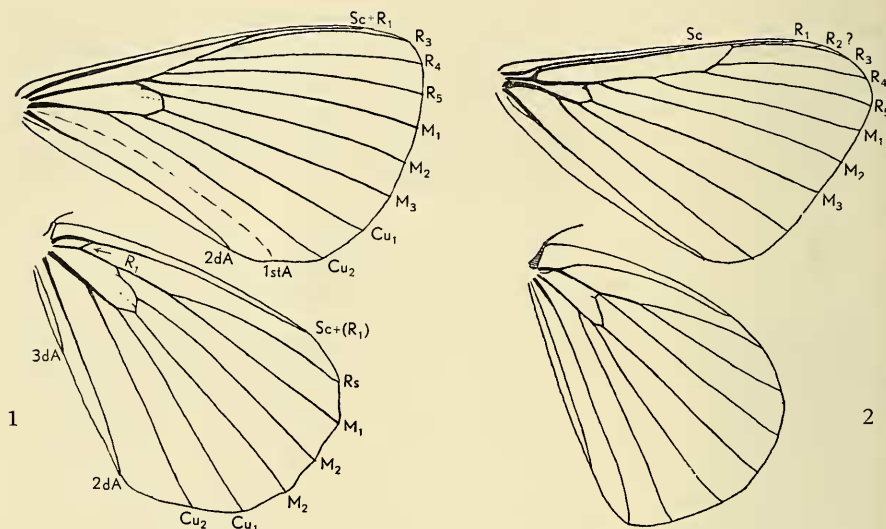
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The Eupterotidae are an early family of Macrolepidoptera, generally recognized to be related to the ancestor of the Saturniidae, and perhaps to Lasiocampidae, Geometridae and Drepanidae as well. The normal members of the family, which I will treat here as a subfamily (Eupterotinae), have a peculiar distribution. Almost all of them cover a zone of the warm temperate and tropics of the old world, from China to Australasia and to southern Africa, but there are two or three species from Central America (*Preptos oropus* and *Neopreptos clazomenia* and *marathusa*), which agree in every way with the old world types. A fourth species described from western Colombia (*Preptothauma oxydiata* Draudt) agrees as figured so exactly with the east Asiatic *Apha subdives* Butler that I am inclined to believe there has been an error in the locality.

The family is usually limited to this series, or slightly widened to include a few abnormal genera from eastern Asia and Australia (*Prismosticta* and *Panacela*), but I am personally inclined to define it a little more widely and include also the American *Apatelodes* complex, since they have no very strong differences in the adult, and share the same densely hairy larva. Others would transfer these to the Bombycidae, which are certainly closely related, but the larvae of the latter have the secondary hair minute, being nearly naked, sphinx-like or twig-like. In this the South American genus *Colla* agrees with the true Bombycidae.

This association of *Apatelodes* with the Bombycidae was, I believe, first proposed by JORDAN in *Nov. Zool.*, vol. 30, p. 166, and was followed by SCHAUS in the "Macrolepidoptera of the World". In the broader sense the family may be defined: Tongue very weak or absent; antennae always broadly pectinate in male and frequently in female also; chaetosema absent, ocelli absent so far as examined. Vestiture of body and usually wing deep and rough; tympanum absent. Both wings with 1st A absent, Cu apparently trifold (unlike the Lasiocampidae, Anthelidae, Endromididae, etc.), though in the *Jana* group with the lower discocellular vein pretty short and erect, approaching the quadrifid condition in one or both wings; fore wing with radial system various, but usually with R_2 stalked the farthest when present, never with R_4 and $\bar{5}$ stalked the farthest, unlike the normal Bombycidae; male hind wing with frenulum-base always thickened and frenulum almost always present and functional, though often pretty short, in a few genera (mostly Janini) much reduced or absent; Sc and R rather parallel at base, generally connected by a more or less distinct cross vein (R_1) and then parallel or diverging; but always well separated from R beyond cell (unlike the Brahmaeidae and Lemoniidae = Sabaliadae). Larva soft, with biordinal hooks on the



Figs. 1—2. Venation of Eupterotidae. 1. *Stenoglene gigantea*. 2. *Cotana erectilinea*.

prolegs, which are well developed; with warts, usually small and concealed by dense secondary hair; frequently with massive tufts and occasionally with pencils, the latter almost limited to the Apatelodinae. Pupa in a weak cocoon, partly formed of hair, or in the ground.

The separation from the Bombycidae is somewhat intangible, and mainly of tendency: besides the usual difference in the radial system, the nearly naked larva is the most distinctive feature, *Colla* going to the Bombycidae in antennae and genitalia as well as larva. Many of the true Bombycidae also have lost the functional frenulum, though a minute rudiment always survives, even in *B. mori*, where HAMPSON refers to it as absent.

Passing by a few odd genera for the moment we may divide the Eupterotidae into two subfamilies: the Apatelodinae, which are more primitive and almost wholly American, and the Eupterotinae, which are almost wholly old-world. They may be separated as follows:

*Apatelodinae*¹⁾: Radius with all five branches preserved, R_2 and $3, 4$ and 5 strongly stalked together, or with R_2 lost, leaving R_3 more shortly stalked than R_4 and 5 ; R_5 converging with M_1 from its point of separation to margin, as in most true Bombycidae.

Eupterotinae: R_3 and 4 stalked the farthest, R_5 from further back on its stalk; R_2 a short spur or more often lost; R_5 and M_1 not converging to margin.

The aberrant types that will need fuller discussion are *Panacela*, *Prismosticta* and "*Andraca*" *albilunata*. The last appears to be a true Apatelodine from eastern Asia; the other two are abnormal forms, which need a subfamily apiece. A list of genera definitely excluded is given at the end of this paper.

¹⁾ I see no reason to change this name to Zanolinae; the name Apatelodinae is many years older, familiar through PACKARD's Revision of the Notodontidae, and based on a perfectly valid genus.

After analysis of a considerable number of characters I feel that the condition of the discocellular veins and median spurs gives the best tribal subdivision of the normal Eupterotinae, roughly as already used by AURIVILLIUS in *K. Svenska Vet.-Ak. Handl. Bih.*, vol. 27, fasc. 4, p. 7, and will treat the first type, below, as a tribe, while the other venational types form a more heterogeneous remainder, including some primitive genera, which may have a separate origin. For further subdivision the male genitalia are important.

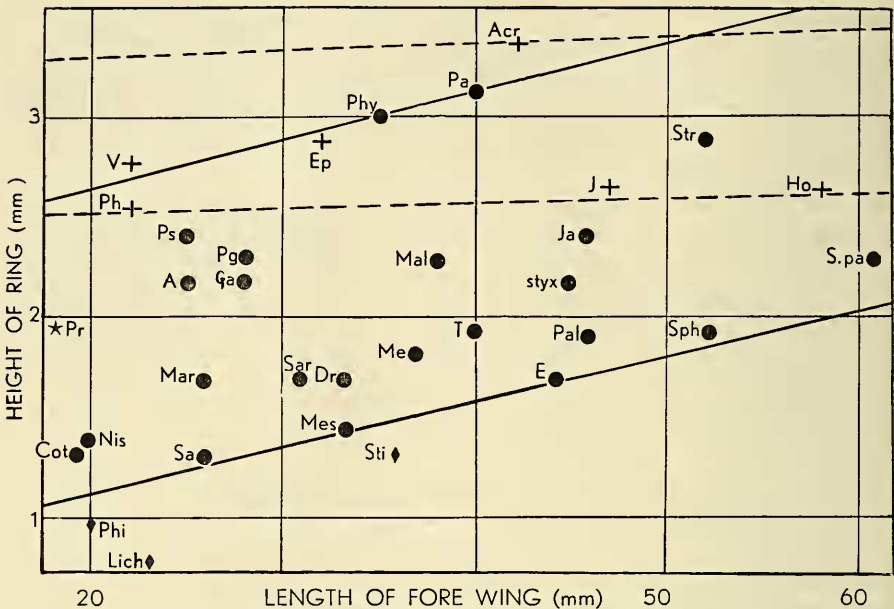
These genitalic characters (figs. 27, 28) are difficult to evaluate, showing an extreme degree of variation even in closely related genera, outside the typical Eupterote group. The primitive forms (genitally speaking) have all the normal structures separate, uncus, tegumen, valves, juxta and aedoeagus, while in a few of the most advanced all these organs are fused. The uncus when distinct always shows a broad base, and usually bears paired processes but never a simple central one. Structures in the area between anal tube and valve (gnathos, transtilla and/or dorsal portion of anellus) are so variable that they often cannot be homologized, and all may be absent;²⁾ paired bristle-tufts between base of valve and juxta may represent clavus or transtilla; the juxta may take almost any form even in species of a single genus (e.g. *Jana*), but in the higher types (Eupterotini and *Phiala* group) takes the form of a sharply bent or folded sheet, attached both to the inner faces of the valves and the middle of the aedoeagus, so that little movement is possible. The aedoeagus shows but little variation, being a simple cylinder or nearly so, often with fine scobinations externally or internally (or continuous from one to the other), but rarely shows a heavier cornutus (most conspicuously in *Acrojana* and *Viana*); *Jana gracilis* has a cluster of spines. The clasper is never recognisable, though the valve often shows costa or sacculus as separate chitinized strips, and is usually variously spined or toothed along the outer margin. In the *Eupterote* group it bears a striated (? stridulating) area on the margin, but is never otherwise non-functional as in *Tamphana* of the Apatelodinae.

The relation of the size of genitalia to the size of moth is curious (see diagram). The primitive members of the family have genitalia of the full proportional normal size, while in the *Phiala* group (diamonds) they are extraordinarily small. There is also some variation by groups; thus in the Janini (+, and enclosed in broken lines) the size is practically independent of the size of moth, *Stenoglène* (Ph), the smallest examined, and *Hoplojana* (Ho), the largest, having genitalia



Fig. 3. Venation of *Panacela lewinae*

²⁾ MELL calls these structures transstyla (i. e. transtilla), but I think they more often represent the gnathos.



Graph. I. Relative size of Genitalia. Height of 9th segment plotted against length of fore wing in millimeters. Janini: crosses (+), enclosed in broken lines. Tissangini: off plot at top. Eupterotini: circles (●), enclosed in solid lines. Phialini: diamonds (◆), and below lower solid line. Prismostictinae: asterisk (*). Panacelinae: off plot at left.

of almost the same absolute size. But in the Eupterotini (●, enclosed in solid lines), there is considerable, though not quite proportional variation with the size of moth, so that the plot makes a diagonal array. In this series the more primitive forms, such as *Ganisa*, *Apha* and *Pseudojana*, tend to be somewhat larger in proportion. The three Phialini measured (diamonds) make a relatively still smaller class by themselves. *Striphnopteryx* (Str), *Melanobrix* (Me) and *Cotana* (Cot), fall in with the normal Eupterote group, as their other features of structure would lead one to expect. *Tissanga* (off the graph above) goes in a class by itself, having the largest male genitalia of the whole family, but *Panacela* (off the graph to the left) and *Prismosticta* (* Pr) show normal proportions.

JANINI

Legs generally unarmed; hind tibia with four spurs, fore tibia with a terminal spine in only *Hoplojana* and *Stenoglene gregorii*, the latter with spines on all tibiae; hind wings (fig. 1) with lower discocellular vein shorter, with rare exceptions, more erect than middle one, and straight, the lower M-spur weak when present, and not affecting the vein; mdcv always bearing the upper median spur, or with a marked angle showing where it was lost (in *Viana* only on the fore wing), the M-spurs usually represented by folds only, though chitinized in the fore wing of *Hoplojana* and *Camerunia*. Male genitalia with juxta free, a flat or curved plate, varying in form, the aedoeagus free to slide along it; valve with a strong tendency for the costa to become free, always separated by a suture except perhaps at extreme base. The Janini are wholly African.

AURIVILLIUS places the two Oriental genera *Melanothrix* and *Palirisa* here, but they show the recurved juxta attached to the aedoeagus like normal Eupterotini. Both have vein ldcv straight and sometimes shorter than mdcv, but strongly oblique, running in the same general direction as mdcv. *Melanothrix* may really belong here, but *Palirisa* is closely related to normal Eupterotini.

The genera of Janini examined fall mainly on wing-characters into two groups, and one of these into two subgroups; the genitalia are so extremely plastic that groupings are not clear.

Jana, *Hoplojana* and *Acrojana* form one group, with normal venation, fully developed frenulum and hook, and have vein M_1 free in both sexes, *Viana* agrees in most points but has M_1 stalked. The male genitalia have no special armature above the aedoeagus in the mid-line (transtilla or gnathos); but the eighth sternite may be modified anteriorly. In *Hemijana*, *Camerunia*, *Epijana* and *Stenoglene* the frenulum is nonfunctional, and does not work with a frenulum-hook; though it is still quite visible in *E. cosima*. They all have specialized structures between aedoeagus and anal tube, a spined gnathos or a pair of lobes or spine-patches, sometimes connected across the midline by a chitinous bridge, perhaps the transtilla. There is some disharmony between external and genitalic characters, *Camerunia* being the most synthetic type in venation, while *Stenoglene* and *Epijana* have a more primitive type of genitalia.

The four latter genera clearly divide into two pairs: in *Hemijana* and *Camerunia* the costal venation is normal, the upper median spur of fore wing is well chitinized, in the hind wing Sc and R continue closely parallel beyond the rather inconspicuous R_1 , and diverge very gradually toward end of cell; in the genitalia there is a heavy transverse gnathos bearing two masses of strong spines, the saccus is cylindrical or nearly so, and the aedoeagus is finely scobinate, externally or internally. In *Epijana* and *Stenoglene* (fig. 1) the space above R is comparable in width to the discal cell, and $R_1 + 3$ either arises from the radial stem beyond the cell, or else runs closely parallel to the main radial stem and rejoins it; it then runs abruptly across to Sc. In the hind wing Sc and R normally diverge abruptly from the very strong cross vein (R_1). The genitalia have two dense hairy pads above the articulations of the valves, often connected by a transverse chitination (transtilla), the saccus is very short and open V-shaped, the vinculum above it being slender, and the aedoeagus ends in a flat external process. In other features each genus is unique.

Hoplojana (undescribed species near *indecisa*; Carnegie Museum, figs. 4, 29, 30): Combined uncus and tegumen a massive irregular mass, deeply cleft on the broad square terminal end, with a shallow groove on each side, containing a small and slender cylindrical process, the ring immediately below it (a portion of tegumen) very narrow, but vinculum enormously widened at attachment of valve, which is far ventral; saccus of triangular type and unchitinized in middle but very long for that type; valve with costa nearly free, a great curved, flattened spine bearing a blunt tooth near base of its concave upper edge; residue of valve (sacculus) very short and bluntly pointed; a bristle-tuft in membrane (clavus?) near base of valve; gnathos a vague flat plate; juxta saddle-shaped, ending in a large triangular plate, half surrounding the very slender aedoeagus, which is unmodi-

fied. Eighth sternite with a triangular anterior extension. External characters much like *Jana*; fore tibia (but not mid tibia) with a massive terminal spine; both wings with mdcv oblique and ldcv nearly vertical, subequal in fore wing, the latter short in hind wing, M_1 free, Sc and R of hind wing diverging promptly beyond the cross vein.

H. rhodoptera is less abnormal, the uncus less extended in the middle line, with minute addorsal, large subdorsal and triangular lateral processes; and the lower portion of valve much shortened, leading toward *Jana*; but is clearly related.

As now defined *Hoplojana* is easily recognized, being the only Janine with a heavy spur on fore tibia only; but the species are divergent in appearance and some may be separately derived from groups of *Jana*.

Jana (genitalia of four species examined). Middorsal line of ring (tegumen fused with uncus) reduced to a narrow bridge, or even obsolete, but flanked with a pair of long processes, eighth sternite not modified; otherwise different in each species.

J. pretiosa (Cornell and Carnegie Museum, fig. 5). Tegumen with dorsal portion narrow but well developed; the two processes far apart, blunt, cylindrical, nearly simple, the tegumen below them narrow, with a wide space above the articulation of the valve, but less extreme than in *Hoplojana*. Valve essentially as in *Hoplojana*, the long free costa simple, curved, the lower part short and more sharply triangular; juxta short, nearly flat, the terminal edge even and transverse, its lateral corners cut off obliquely, the basal forming a wedge between the valves. No gnathos or clavus. Vinculum much widened at articulation of valve, but less than in *Hoplojana*; saccus normally triangular, aedoeagus with scobinate lining, simple.

J. eurymas (Carnegie Museum, fig. 6). Similar; processes of tegumen more slender, serrate on inner edge, with sharp apex and a subterminal point; valve on a more sharply defined extension of vinculum; the costa ending in a sharp double point, the main part of valve somewhat less reduced, with a sharper apical point and a blunt squarish dorsal angle; juxta with the truncation at each angle of terminal edge about as long as the transverse part, so closely articulated to valves that they cannot be opened.

J. strigina (Carnegie Museum). Tegumen with dorsal part rudimentary, the middorsal part without any chitinization; lateral processes very far apart, short and weak, blunt and merely setose; the tegumen below them also very slender and vinculum about as much widened as in *Hoplojana*. Valve with costa very heavy, tapering, setose, with a tuft of bristles at the blunt apex; main part short, bluntly pointed, the ventral edge (which articulates with the juxta) separated from the rest by a deep membranous slit; the suture dividing costa from main part even extending across the articulation. Juxta somewhat saddle-shaped, convex from side and concave longitudinally, but ending in a blunt transverse edge, unlike *Hoplojana*; aedoeagus like the two preceding. Saccus a very broad open V, not well defined; lobe of 8th sternite better developed than the preceding, hardly as strong as in *Hoplojana*.

J. gracilis (fig. 7). A distinct type, perhaps worthy of a separate genus, the

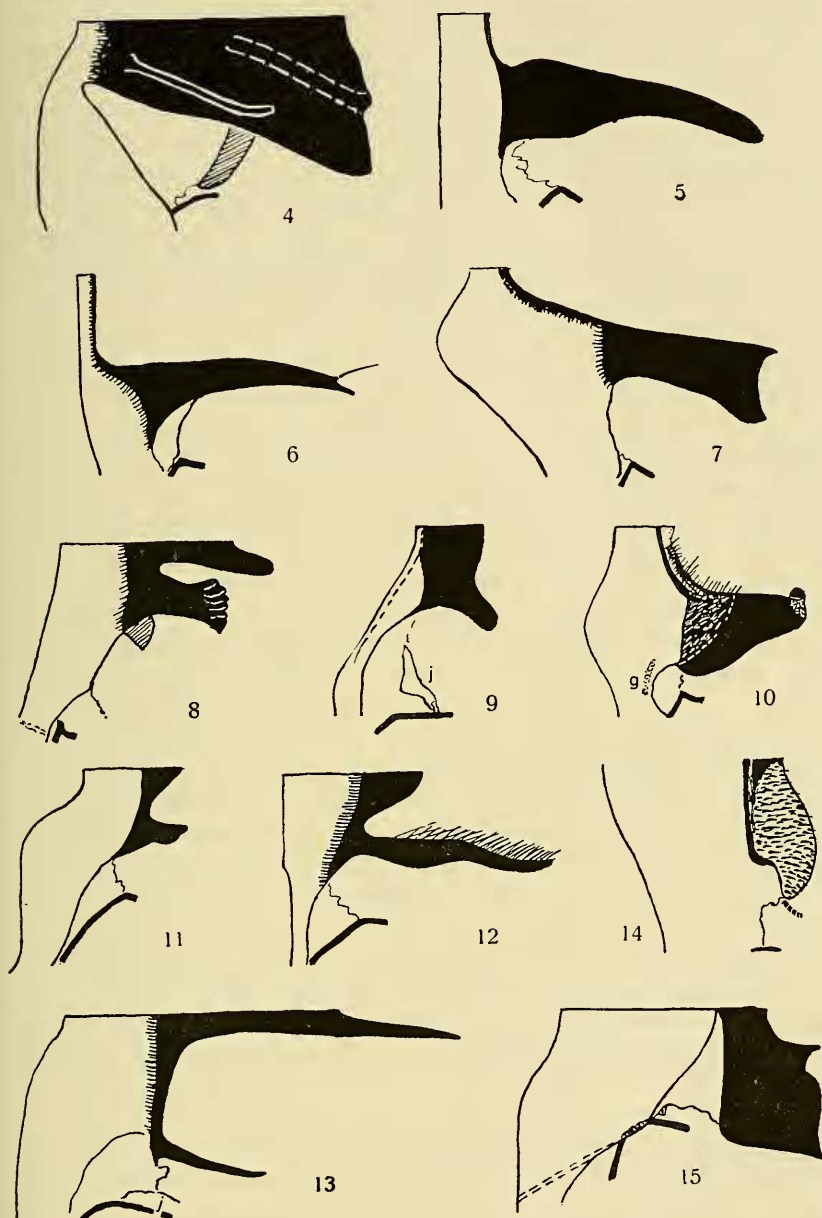


Fig. 4—28. Types of the uncus in the Eupterotidae. Semidiagrammatic. Each plot shows the left half, with morphological uncus in solid black and associated structures in outline. j = juxta, g = gnathos. 4. *Hoplojana*, new species. 5. *Jana pretiosa*. 6. *Jana eurymas*. 7. *Jana gracilis*. 8. *Acrojana scutaea*. 9. *Viana crowleyi*. 10. *Camerunia flava*. 11. *Stenoglene gregorii*. 12. *Stenoglene subiridescens*. 13. *Epijana cosima*. 14. *Tissanga pretoriae*. 15. *Melanothrix nicevillei*.

valve being essentially as in *Stenoglene*, etc. Narrowed middorsal part of tegumen very short and heavy, the tegumen extended either side in large inflated lobes, and gradually narrowing downward without any indication of the broadened vinculum of all the preceding species; side-processes deeply bifid at tip, short and broad; valves with normal articulation, reaching well up toward the processes, the costa with no tendency to be free, short, sharply upcurved, ending in a short dorsal angle and a rounded outer lobe, both spinulose; the rest of valve also ending in two flat points, the upper longer and blunt. Juxta almost semicylindrical, the apex excavate in a deep V; aedoeagus with a broad, oval, flat ventral extension, edged with enlarged scobinations, and with a mass of heavy internal spines; saccus very small and rounded; 8th sternite reduced, but tergite much lengthened, tapering, and with a double basal extension.

In venation the Janas also show some variation, particularly in the origin of the main branches from the cell. Normal group (*pretiosa* with *roseata*, *eurymas*, *strigina*) with fore wing with M_1 barely free, mdcv and ldcv subequal in length, the upper nearly vertical and bent, the lower straight and inwardly oblique; hind wing with udcv and mdcv oblique and in line, the upper rather shorter and middle more or less visibly bent; lower hardly as long and vertical; Sc and R diverging rather slowly from the very broad discal cell, cell Sc at half length of discal cell being about $\frac{1}{4}$ its width; cross vein (R_1) distinct.

J. tantalus Herrich-Schäffer, and *crepax* Wallengren (*tantalus* Gaede in SEITZ, in error, *tantalus* variety H.-S.) make a distinct subgroup; *tantalus* is normal in venation, but the two specimens of *crepax* at hand show abnormalities, one with M_1 stalked on R_{3+4} on both wings, the other with it stalked with R_5 only on one wing, with R_{3+4} separate. Both show a widely diverging Sc on hind wing, the costal cell at half length of the discal cell being more than half as wide as it. *J. gracilis* has udcv much longer in both wings, being longer than mdcv, which is vertical in fore wing, while ldcv slants in, as in *pretiosa*; hind wing with Sc cell very narrow and discal very broad, the ratio being hardly $\frac{1}{6}$, and R_1 absent.

Acrojana (*scutaea*, figs. 8, 31, 32). Tegumen elongate in middle line, unlike the preceding, almost as long as height of ring, the uncus and tegumen proper fused, but with traces of a suture before bases of lateral processes; uncus ending in two long flat lobes, lateral processes rather short, blunt, with rounded fluted ends. Tegumen below processes broad, gradually narrowing to a normal vinculum and a normal but elongate triangular saccus; faint chitinization in gnathal area; valves rather narrow at base, the base of articulation extended in a point ("tendon"), costa represented by an articulated, small and slender cylindrical rod; rest of valve simple, convex and with its dorsal edge upcurved, ending in two sharp points, the lower of which is double. Juxta semi-cylindrical, curving about aedoeagus, pointed at base, dentate and bifurcate at tip, ending in two long sharp lateral angles. Aedoeagus with much enlarged spoon-shaped tip and a single large dentate cornutus, 8th sternite with a strong basal extension. Superficially easily recognized, being the only Janine genus with hind wing angled at Cu_1 ; venation about like *Jana*, but the mdcv of both wings much lengthened, twice as long as ldcv.

Viana (*crowleyi*, fig. 9, 33, 34)³). Tegumen-uncus transverse, strap-shaped, but not narrowed in middle line, the processes far apart, short and rounded; gnathos absent, clavus a heavy tuft of bristles on a rounded prominence; rest of ring normal and narrow, not widened for articulation of valve, which is widely separated from dorsal structures, like *Hoplojana* and typical *Jana*. Valve with costa rather short, with multiple, setulose tip, rest of valve longer, slender, tapering and sharply bifid, the two structures broadly in contact, but separated by a good suture except at base. Juxta with a pentagonal nearly flat main part, fused to a thick ring completely around the aedoeagus (unique in the subfamily). Saccus a short, thin, vertically flattened blade. Aedoeagus greatly swollen at tip, and especially at base, with a single nodular cornutus. Eighth segment unmodified.

Venation unique, the radial system being normal (like the preceding) except for R_1 running into Sc, the costal system even narrower than in the preceding genera. M_1 short-stalked, mdcv twice as long as lower, oblique and bent, the ldcv actually sharply slanted *in*. Hind wing with long and very narrow cell, the common stalk of R and M_1 arising from only half its length (as in some *Stenoglene*), and the mdcv correspondingly very long and longitudinal; ldcv nearly vertical, slanted in rather than out. Sc strongly connected with cell, sharply divergent.

A curious genus, the normal frenulum, general build and narrow costal area with straight costa separating it from *Gonojana* (with which AURIVILLIUS and GAEDE unite it), and grouping it with the preceding genera, but the stalked M_1 , doubly bifid valve etc., are suggestive of the following genera, and many features (e.g. course of R_1 , forking of $R + M_1$ in hind wing, large clavus and curious saccus) are unique.

Camerunia (*flava*), figs. 10, 35, 36⁴). Tegumen rather broad and transverse, edged on each side of center by a transverse densely hairy pad with spinose outer boundary; sides much broadened and bearing two blunt, flat, hairy extensions; below anal tube a transverse bar (gnathos?) with a heavy tuft of spines at each end; vinculum somewhat widened to upper part of articulation; saccus cylindrical, but with a narrow membranous middle line. Valves bipartite, as in *Viana*, the upper part (costa) bifid, the lower slender, curved and sharply pointed, juxta simple, much wider than high. Aedoeagus simple, scobinate externally.

Fore wing with venation much like *Viana*, but R_1 free, though closely crowded, and M_1 free; hind wing with frenulum reduced to soft hairs, though the frenulum-base is normal; Sc closely parallel to cell in middle part, mdcv much shorter than in *Viana*, though twice as long as ldcv, the cell smallish but normal in form.

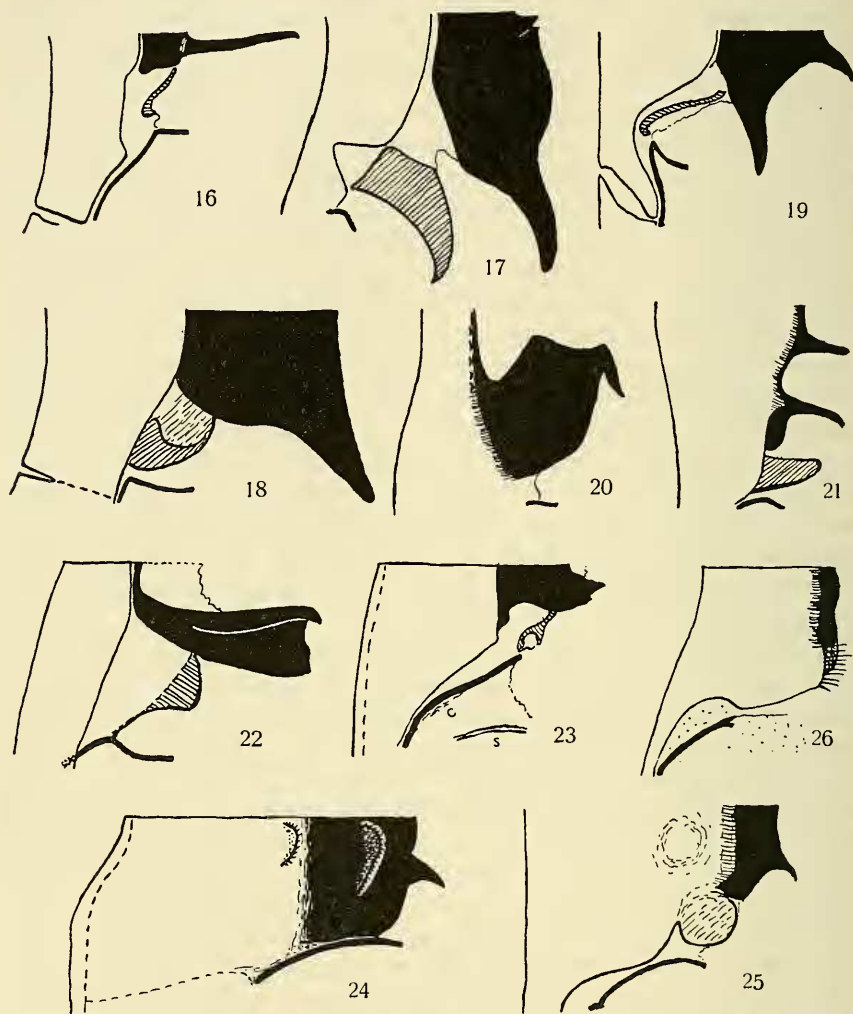
This genus and the following have thin ample wings, small bodies, and light coloring, suggesting a connection with the following subgroup, but they may be separately reduced from something like *Viana*.

In the remaining Janini the eighth sternite is unmodified.

³) The name *Viana* is preoccupied but I will not propose a substitute here; this should be done in connection with a fuller revision, that should consider both species and genera.

⁴) The genotype, *C. albida* was not available; while questioned by AURIVILLIUS, I fully believe *C. flava* is congeneric.

Hemijana bimaculata, fig. 37⁵⁾). Ring as in *Camerunia*, valves similar, shorter, the fork of costa short and simple, the lower segment of valve blunter; processes of tegumen simple, curved, cylindrical; gnathos broader, the two tufts of spines



Figs. 16—26. Types of the uncus in the Eupterotidae. Semidiagrammatic. Each plot shows the left half, with morphological uncus in solid black and associated structures in outline. C = costa, S = saccus. 16. *Apha tychoona*. 17. *Apona plumosa*. 18. *Ganisa postica*. 19. *Pseudojana incandescens*. 20. *Parajana gabunica*. 21. *Poloma angulata*. 22. *Pseudoganisa curvini*. 23. *Janomima mariana*. 24. *Marmaroplegma paragarda*. 25. *Dreata hades*. 26. *Phyllalia patens*.

⁵⁾ The two specimens at hand (National Museum and American Museum of Natural History) show the exact pattern of *bimaculata*, but completely lack the two spines on fore tibia, given by GAEDE as the generic character for *Catajana*. I wonder if he could have seen the spurs on the middle tibia.

closer together; juxta higher, with two processes on upper edge. Aedoeagus with lining instead of outer surface scobinate. Appearance like *Camerunia*; venation of hind wing similar, of fore wing quite un-Janine, with M_1 short-stalked, mdcv short and upright, ldcv decidedly longer and oblique, and M-spur attached opposite M_2 .

This genus would hardly be considered distinct from *Camerunia*, were it not for the totally different closure of the fore wing cell, also used as a key-character by AURIVILLIUS.

Stenoglene is the central genus of the group of Janini with Sc and R widely separated in fore wing and R_1 and R_3 long-stalked and arising out of $R_4 + 5$ or R_5 . It is varied in details, both in pattern and structure. Eleven species are at hand, unfortunately five of them represented only by single females from the Carnegie Museum. *Epijana* is an immediate derivative, though *E. cosima* is a little more distinct than the other species examined; so it can be accepted as a good genus. "*Epijana*" *cinerea*, however is a normal *Stenoglene*, and is as I believe only the normal female of *S. maculifera*, for it matches the male figured in SEITZ more closely even than the female figured by SEITZ, both in color and course of the postmedial line. The radial system (fig. 1) cannot be used to distinguish *Stenoglene* and *Epijana*, — whether $R_1 + 3$ is stalked with $R_4 + 5$ or with R_5 alone, for four species of *Stenoglene* show the *Epijana* condition.

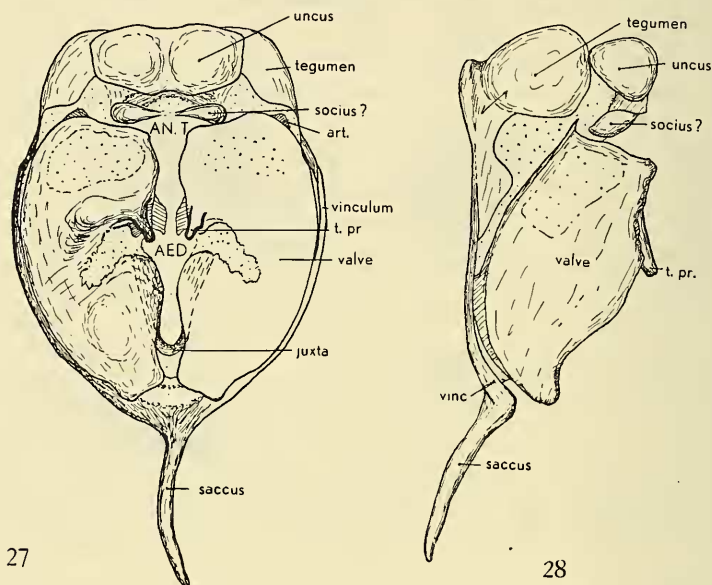
Stenoglene breaks into two groups on the pattern, with two species left over. *S. gregorii*, *gigantea* and *nivalis* have a strongly excurved postmedial line, either waved, or blurred and tending to break into a series of patches; *S. subiridescens* and *citrina*, with the females *cinerea*, *preussi* and two undetermined, have a highly irregular pm., extended roundly in cells M_3 and Cu_1 , and often filled with dark patches there. Genitalic characters, so far as available, confirm this grouping. *S. gregorii*, alone of the species examined, shows terminal spines on all the tibiae, but in other features is very close to *S. gigantea* (possibly a synonym of *similis* Roth.).

S. obtusa Walker forms a group by itself, among the species examined, but one may expect that *bithynia* and *tristis* will go with it. GAEDE considers *tristis* to be its female, but the degree of sexual dimorphism would be unusual in this group. It is transitional to *Epijana* in pattern, with simple oblique postmedian line and scaling, and notably in the suppression of the setae along the veins beneath. The other abnormal species is an undetermined female; it has the postmedian line mostly oblique, but extended below, instead of above vein Cu_2 .

Stenoglene gregorii (genotype of *Phasicnecus* Butler, very probably also genotype of *Stenoglene*, for the original figure of *S. hilaris* looks like a darkly marked female, figs. 11, 38, 39). Tegumen dorsally moderate and bluntly widened in the middle, the two processes wide apart, gnathos represented by a thread-like loop of chitinization; ring regularly narrowing to a slender vinculum; valves of two parts, like *Epijana*, etc., the costa much broader than in preceding types, but tapering to a slender incurved hook, the other portion slenderer, also tapering to a more slender but blunter hook; clavus represented by a pair of irregular pilose sclerites as in *Epijana*, the juxta also longer than wide, semicylindrical and ending in two processes. Saccus vestigial, widely open, 8th segment simple. Aedoeagus unarmed,

but with a terminal extension. *S. subiridescens* differs from *gregorii* in having the subdorsal processes of tegumen long and dentate on outer half, costa more triangular, the terminal portion with a subapical side-tooth; valve proper also with a subapical tooth; juxta smaller with shorter processes, and clavi much reduced, not visibly connected to each other or juxta, but still showing as apical ridges rather than the simple tufts of the *Jana* group.

The principal variations are the following, as represented in the material studied: fore wing rounded at apex in *gregorii* and *gigantea*, *nivalis*, *subiridescens* (fig. 12) and *citrina*, marked in male and subfalcate in female of the rest; spines on all tibiae in *gregorii* only; R_1 arising out of R_4 beyond the separation of R_5 ,



Figs. 27—28. Typical male genitalia (*Striphnopteryx edulis*), with names of structures. 27. Lateral view. 28. Ventro-posterior view. AED: position of aedoeagus, AN.T: position of anal tube, art.: dorsal articulation of valve (homologous with costa), t.pr.: terminal process (morphological apex of valve), vinc.: vinculum.

as in *Epijana*, in *gigantea*, *cinerea* and two undetermined females, before it in the rest; fork of R and M_1 of hind wing definitely beyond origin of M_2 from cell in *obtusa*, *gigantea* and the same two unnamed females; Sc and R widely separate at base but connected by a full-strength cross vein in *gigantea* (fig. 1); closely approximate at base and then diverging abruptly beyond the cross vein in *subiridescens*, *nivalis* and *citrina*, also less sharply in one undetermined female; uncus with addorsal as well as subdorsal processes in *obtusa* and *gigantea*, partly fused in the former, but much shorter than in *Epijana cosima*; linear gnathos visible only in *gregorii* and *obtusa*; transtilla lobes absent in *subiridescens* and *citrina*. Among superficial features we may note the development of the anal lobe of the female, the presence or absence of a straight medial line, and the course of the postmedial line.

Epijana cosima (figs. 13, 40, 41). Uncus with a long narrow central process, ending in two strong spines; the subdorsal spines small, fine and falcate, very sharp, with enough of the suture preserved to show they belong to the uncus, though far down on the side. Ring otherwise normal; valves cleft well down toward base, then with a membranous suture line, not quite reaching articulation; costa slender, serrate and tapering to a point at apex, with an obtuse tooth on upper inner edge; rest of valve mainly a long curved hook, like *Camerunia*. The ring has some special chitinization and abruptly narrows opposite the junction of costa with valve proper, doubtless marking the junction of tegumen and vinculum. Saccus very short, almost rudimentary; juxta cylindrical, ventrally ending in a single blunt point, but dorsally extended on both sides, and almost enclosing the aedoeagus, joining a pair of setose chitinous structures representing the sides of the transtilla, but much heavier than in *Hoplojana* and *Acrojana*; the two connected by the narrow chitinous transtilla. Aedoeagus ending in a long tapering process, 8th segment simple. Moth extremely shaggy, especially toward base of fore wing; frenulum very short, with a hook far toward base of fore wing, but not normally engaging it; fore wing with cell Sc half as wide as discal in female, almost as wide in male, $R_1 + 3$ stalked with R_4 beyond R_5 , then abruptly diverging and running across practically to Sc, when R_1 separates and goes directly across to Sc, like a minute cross vein; M_1 separating first from the same stem. Mdcv a little longer than ldcv, strongly oblique with the angle and spur near its upper end; hind wing with inner fringe broad and somewhat irregular, but not apparently sheared off as neatly as in the species discussed below, anal angle slightly lobed; Sc and R sharply diverging beyond the cross vein, R and M_1 stalked, mdcv a little longer than in fore wing and ldcv decidedly oblique, though less so than mdcv. I believe "*Acrojana*" *rosacea* also belongs to this genus.

Drepanojana. Not examined, supposedly distinguishable by the white apical spots, and the blue scaling of the female. The wing-form is as in the second group of *Stenoglene*.

Gonojana (*dimidiata* examined, holotype of *tenuis* Holland). Male not seen, easily distinguished by the deeply lobed hind wing, female very small, with deeply arched costa, $R_1 + \frac{1}{2}$ arising from R-stem even before the forking of M_1 , the outer part of R_3 not quite so closely parallel to Sc + R_1 as in the preceding two genera.

Urojana not seen. Forking of R like *Epijana cosima*, fore wing rounded and body slender like *Stenoglene*, but hind wing angled at M_3 (SEITZ pl. 45, fig. d1).

In the first three genera of Janini the legs are very heavily tufted, as usual in the family, in *Viana* these tufts are less extensive, in the next genera the hair is much sparser and loose, while *Gonojana* has only a little loose hair.

The curious genus *Hibrildes* should be mentioned here. It was originally described by DRUCE in the Lasiocampidae, following the KIRBY system in which that family included the modern Eupterotidae, many of the American Saturniidae, Lonomiidae, Anthelidae and many odds and ends. HERING in SEITZ credits it to the Pterothysanidae, and this may very possibly be correct, but it has some resemblance to the Janini. The venation is true quadrifid, and the anal area of hind wing is cut out as in the Pterothysanidae, with 2d A very close to the inner

margin, no 3rd A and a rudiment of 1st A, but the inner fringe is not much lengthened. The base of hind wing is as in *Pterothysanus*, with strong frenulum brace, no frenulum, and almost concave basal part of costal edge. The genitalia are more Eupterotid-like, with heavy ring, no median process of uncus, but a pair of subdorsals low on the sides; valve cleft to the base, but with two processes in place of the single free costa of most Janini. Aedoeagus with two dentate nodules, much like the single one of *Acrojana* and *Viana*.

If this genus is Eupterotid it must attach to the Janini. In any case it is easily separated by the truly quadrifid venation and emarginate inner edge of hind wing.

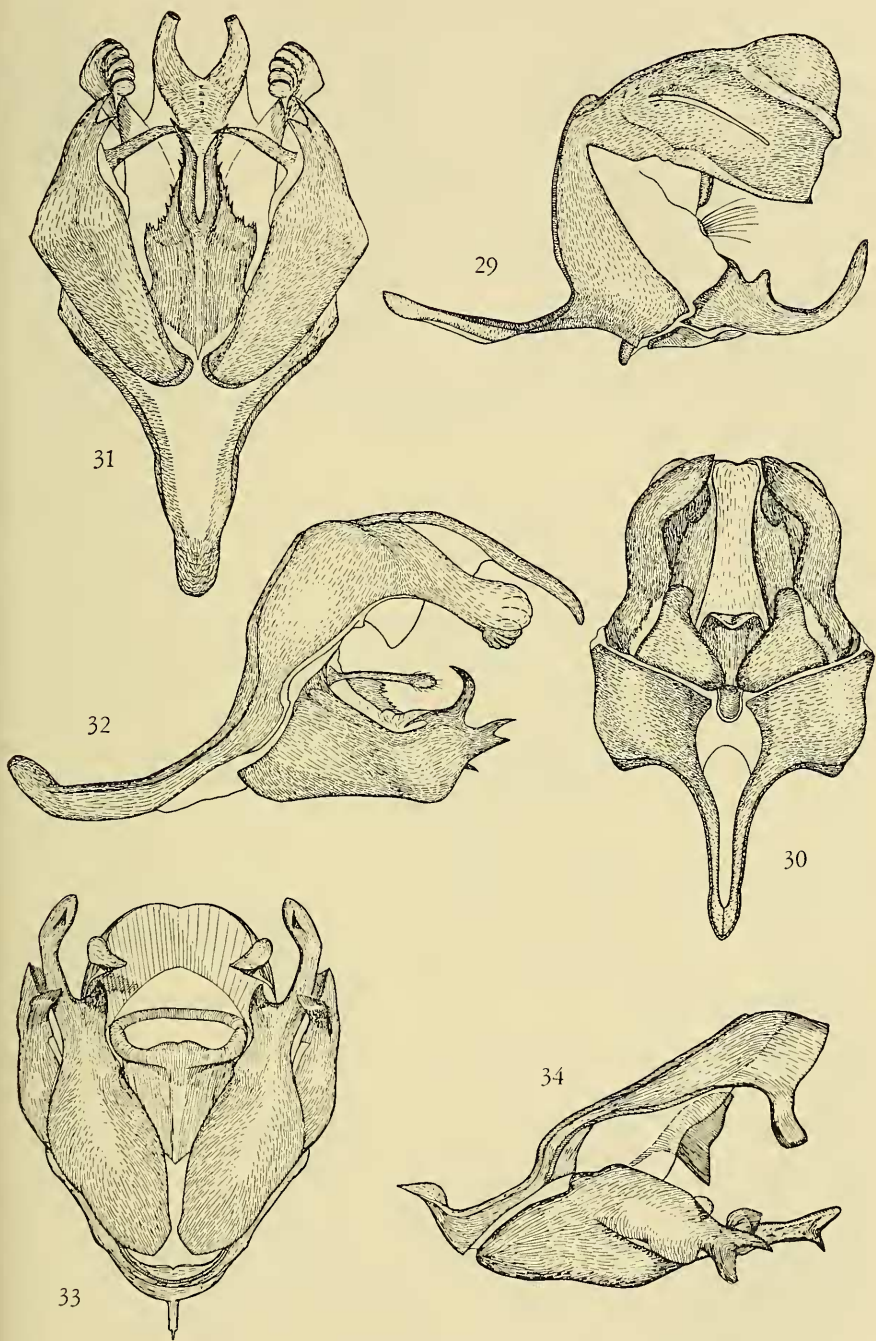
TISSANGINI

The South African genus *Tissanga* shows such a significant combination of characters that it deserves a tribe to itself. It may be roughly described as a type which has the venation of the Eupterotini with the genitalic type of the Janini, in that way showing the more primitive features of each group, and it is no doubt a relict type. It also has a few features of its own, but perhaps no more than certain other Eupterotid genera.

Palpus short, fore tibia unarmed, midtibia much shortened with strong naked spine-like spurs, thrown forward, $\frac{2}{3}$ as long as tibia (unique), hind tibia with all spurs; frenulum and hook normal. Fore wing with R_1 normal, well back, arising nearest Cu_2 , both wings with M_1 free but short, fore wing with mdcv vertical, mdcv and ldcv otherwise oblique out at a definite slant, mdcv short ($\frac{1}{3}$ ldcv in fore wing, $\frac{1}{6}$ in hind wing), both M-spurs well separated and on ldcv in both wings, but represented merely by slight folds, with no trace of chitization; Sc and R steadily but not very sharply divergent from base, the cross vein (R_1) distinct but slender; cells unusually large, over $\frac{2}{3}$ length of wing in both wings.

Male genitalia (figs. 14, 42, 43) relatively the largest in the subfamily; with uncus set off by a clear suture line, in the form of two densely setose pads, with terminal edges meeting at nearly a right angle; gnathos a slightly chitinated bridge, bearing a densely spinulose median knob (unlike Janini), ring undivided, tegumen swollen dorsally, but less than in *Striphnopteryx*, narrowing laterally above articulation of valves, then abruptly and greatly widened for the articulation (like *Jana*, etc.), saccus short and very broad, but with no central membrane (like a few primitive Eupterotini). Valve essentially of Janine type, of two parts, separated by a notch at margin and a membranous strip the whole length, down across the articulation; the costa tapering but rounded, not heavily chitinated, the other part diamond-shaped, tapering to a blunt free point. Clavus a group of setae, much like *Hoplojana* or *Viana*, juxta a short thick widely open V, wholly free, aedoeagus nearly simple, terminally swollen, with slight external scobinations. The lower edge of the valve shows some slight irregularities of the chitization at the point where the *Eupterote* group show the striate area.

Sole species *Tissanga pretoriae*.



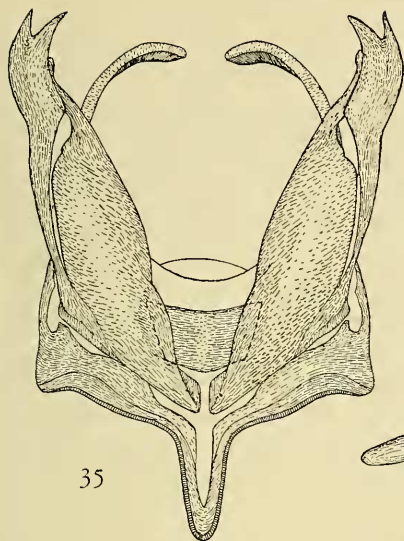
Figs. 29—34. Male genitalia of Eupterotidae, ventral and lateral aspects. 29—30. *Hoplojana*, an undescribed species. 31—32. *Acrojana scutaea*. 33—34. *Viana crowleyi*.

EUPTEROTINI

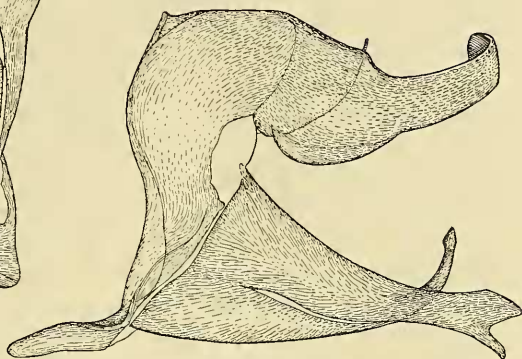
This tribe corresponds to the Eupterotinae of AURIVILLIUS, with slight exceptions: *Tissanga*, just discussed, is an isolated type, doubtless representing the ancestor of the Janini, but without their special venation; the *Phiala* group has always been recognized as distinct, though neatly definable only on the genitalia. As to *Cotana*, the propriety of separating it is not so clear, since it is plainly related to the *Eupterote* group in both venation and genitalia, save for the strong specializations, but *Phiala* and *Cotana* have preserved R_2 , which occurs in no restricted Eupterotine, and so must have had a longer separate history than would otherwise be supposed. The genera *Melanothrix* and *Parajana* also need further study, and may deserve tribal separation, but this seems unnecessary at the moment. *Palirisa*, which AURIVILLIUS put in the Janinae, seems to me in every way closely related to *Eupterote*; the straight ldcv, which caused AURIVILLIUS to put it in the Janinae, is still much too long and oblique; and the genitalia are quite clearly of the *Eupterote* type.

The Eupterotini may be defined as Eupterotinae with lower discocellular of hind wing and almost always of fore wing strongly oblique and long, continuing the direction of mdcv or forming a reëntrant angle with it much longer than mdcv (save in hind wing of *Palirisa*), hind tibia usually with end-spurs only, mid tibia with spurs normal and fore tibia unarmed (except *Nisaga*), radial system normal (except *Pseudoganisa*, which has R_1 stalked, but is otherwise normal), R_2 always absent, M_2 free from radial stem (udcv or mdcv being well developed, frequently both); male genitalia with tegumen and uncus well developed, strongly chitinized, almost always with a pair of subdorsal posterior processes; uncus free from tegumen when valves and aedoeagus are free from juxta (save *Poloma*), usually with juxta fused to both valve and aedoeagus, so that they have lost any extensive motion, and often valves fused to the ring also; valve with costa never a long chitinized structure, usually represented by a small sclerite along base of costal edge or obsolete, leaving the valvula to form apex of valve costally, valvula almost always distinct from sacculus when there is any subdivision at all (not in *Melanothrix*). Valve typically with a striate (perhaps stridulating) area on posterior edge of sacculus. The gnathos is only developed in several of the early genera.

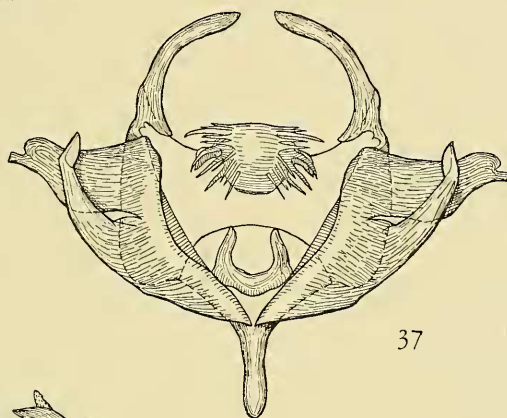
This group divides quite differently from the Janini. There is a normal central group, an African group with reduced dorsal structures, and a series of outlying genera, primitive in some features, such as the preservation of the upper spurs on the hind tibia, but isolated and sidespecialized. The central group is dominantly Asiatic. The juxta in the central group is distinctive, a recurved sheet, its outer end fusing with the inner faces of both valves, its inner with the aedoeagus, so that both are limited in motion. *Melanothrix* also has this type of juxta but in such genera as *Ganisa*, *Pseudojana* and *Poloma* the juxta is free, and in *Apha* and *Phiala* I find none at all, leaving the aedoeagus free to move. The degree of fusion of parts varies to the extreme, *Apha*, e. g., having no fusions whatever, while *Eupterote* has everything fused, even the articulation of valve to vinculum being ankylosed. The central group of genera are *Dreata*, *Sphingognatha*, *Eupte-*



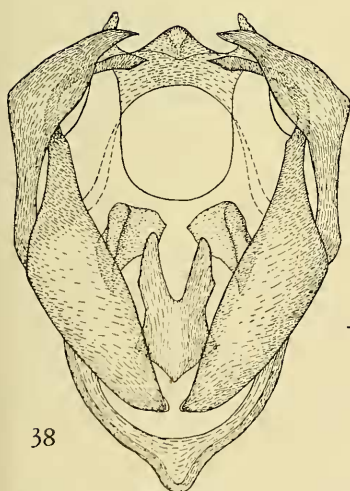
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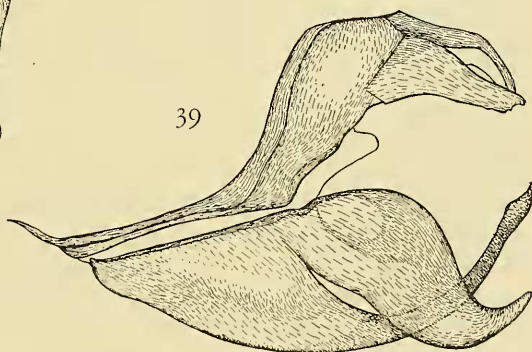
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Figs. 35—39. Male genitalia of Eupterotidae, ventral and lateral aspects. 35—36. *Camerunia flava*. 37. *Hemijana bimaculata*. 38—39. *Stenoglene gregorii*.

rote, *Tagora*, *Messata*, *Sangatissa* and *Sarmalia*, with several others more loosely attached; the outlying ones are *Melanothrix*, *Poloma*, *Apha*, *Apona*, *Preptos*, *Ganisa* and *Pseudojana*, the two latter having a number of points in common; also *Pseudoganisa* and the reduced African group diverge in other ways.

I will take up most of the abnormal genera (which are primitive in some features) first, except for *Striphnopteryx* and *Phyllalia*, which perhaps lead up to the Phialini. They consist of a group from east Asia and America (*Apha*, *Apona*, *Preptos*, *Ganisa*, *Pseudojana*) which agree in having a perfectly simple, hinged valve, and a more varied, partly African series.

Melanothrix (*nicevillei*, fig. 15). Uncus separated from tegumen by a clear complete suture, but not movable; the tegumen broad and transverse, sharply tapering into the triangular vinculum, with an obscure suture (mainly an internal chitinous bar); uncus bilobed, much narrowed in middle, with a small point at mid-line, the two lobes triangular, each with a dorsal tooth; gnathos a transverse strip; valves more than half height of ring, nearly meeting uncus (unlike all Janini), chitinized as a whole, like the following, but with a deep apical notch separating costa from residue, continued a little further by membrane; costa pointed, residue triangular, broad, with a strong upper and short lower terminal tooth; a heavy articulation at base of costa, then a zone of membrane and a second true articulation at base of sacculus (fundamentally like *Apha*, etc.). Juxta basally articulated to valves, which still can be opened fully, the upper end recurved and closely bound to aedoeagus; no saccus; aedoeagus with a rounded-triangular terminal extension and mass of fine cornuti. Eighth segment not modified. Moth with very small body and enormous ample wings, unlike any other Eupterotid; cells very short, frenulum and hook normal; fore wing with radius normal, M_1 short-stalked; mdcv strongly oblique, angled at middle, ldcv equal, less oblique, straight; Cu_2 arising far toward base of cell; hind wing with cross vein weak but distinct, Sc diverging abruptly, mdcv long and bent, ldcv much longer, though straight, continuing its line. Hind tibia with end spurs only.

An isolated genus among those examined, but showing most of the characters of the Eupterotini. The chief Janine features are the straight (though not vertical) ldcv of both wings and full-length costa of valve, free at margin; but these are overbalanced by the loss of the upper tibial spurs, short mdcv of hind wing, with ldcv continuing its line, and such genitalic characters as the fully developed gnathos, high base of valves, Apha-like general appearance of valve and recurved juxta joining the aedoeagus.

ROTHSCHILD (*Nov. Zool.* 24, 463, ff., 19176)) would associate this genus with *Cotana*, etc., but I see no likeness beyond the superficial one of bright color and sexual dimorphism. It is Oriental, including the Philippines; STRAND in SEITZ says "into the Australian subregion" but cites no species from east of the Philippines.

Lasiomorpha. Not examined. Reported as differing from *Melanothrix* in R_1 arising opposite Cu_2 , M_1 connate, mdcv in both wings only half as long as ldcv, in hind wing udcv longer than mdcv, though still oblique. New Guinea.

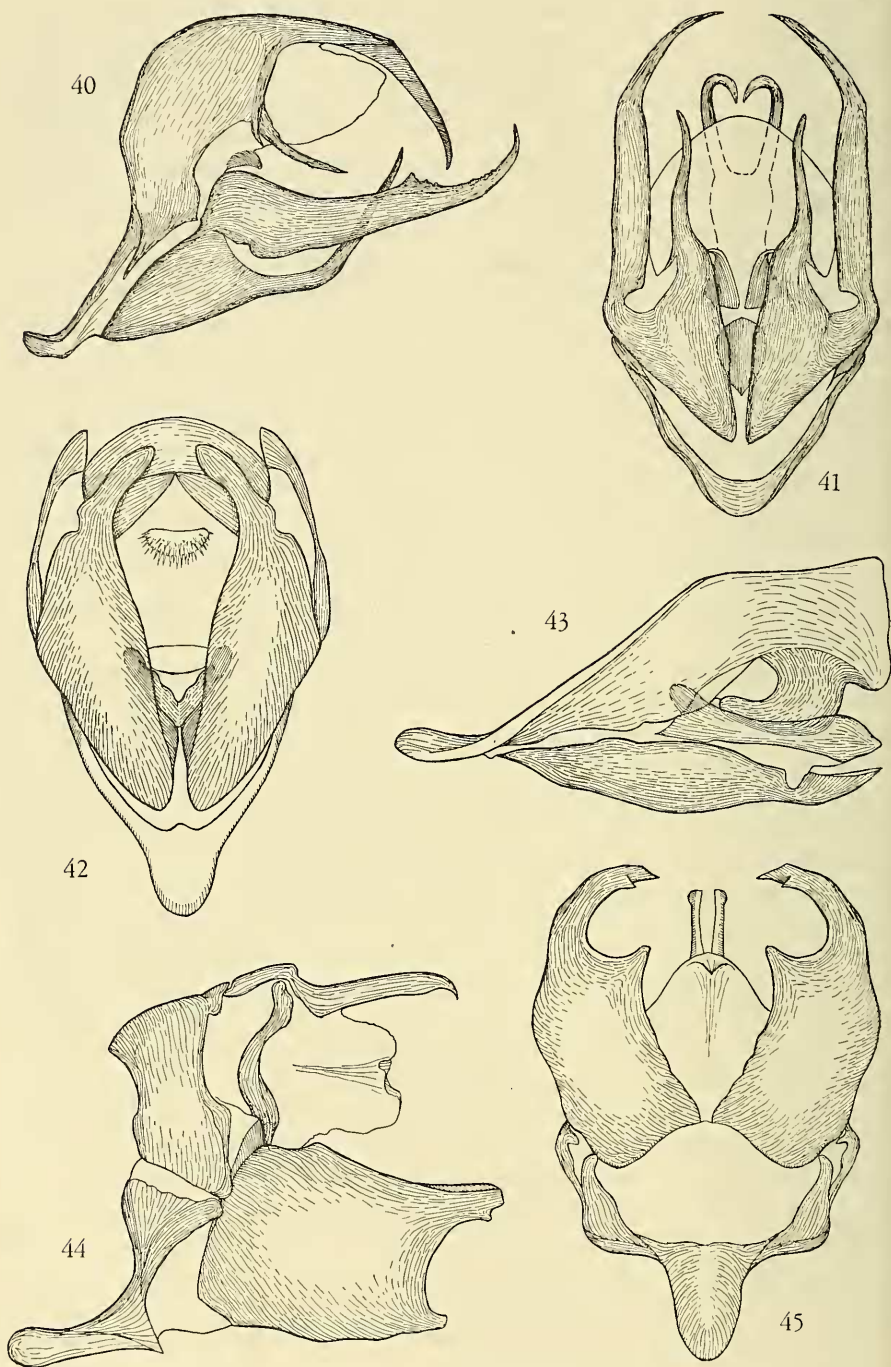
6) He also includes *Drepanojana*, but this is obviously a Janine. He places *maeonia* and *fasciata* as the female of *apicalis* Aurivillius.

Apha (figs. 16, 44, 45). This and the six following genera make a group characterized by the usually simple valves movably articulated to both ring and juxta, so that they can be opened widely. Uncus, tegumen and vinculum are also free, though the two latter are partially fused in *Apona* and *Preptos*. *Ganisa* is the central type and is also linked to *Poloma* and even *Tissanga*. In other features they are widely distinct, as noted below. It is of interest that an *Apha* is the most northern species known from the old world, suggesting that the American type entered by the traditional northern route.

Apha tychoona has the ring broad, with a vinculum of even width, and as wide as tegumen proper, separated from tegumen by a perfect articulation; uncus also free and slightly movable; terminating in two long approximate blades, representing the upper processes of forms which have two pairs; a chitinous strip running from base of uncus to base of valve on each side, representing gnathos, but no trace of a middle part (unlike *Pseudojana*); valve simple, chitinized, ending in dorsal and ventral angles; juxta absent; aedoeagus simple, vesica heavily scobinate; saccus fully chitinized, but broad. Palpi large and closely upturned, hind tibia with end spurs only, unlike the following genera; both wings with normal venation for the group, mdcv much shorter than ldcv and in the same line in both, fore wing with R_1 free, well out but opposite the space between Cu_1 and Cu_2 ; M_1 free in fore wing but stalked in hind wing, closure of cell nearly vertical in fore, oblique in hind wing. The most distinctive feature is the costa of hind wing (as noted by HAMPSON); edge highly arched, Sc and R heavily fused at a point very near base, then sharply and very strongly divergent, so that cell Sc is almost as wide as discal cell. The species are clearly distinguished by MELL in Deut. Ent. Zeit. 1929, 428ff. and 1937, p. 12, with larva on Caprifoliaceae.

Apona plumosa (U.S. Nat. Mus.; fig. 17). Tegumen moderate, uncus free, with minute upper and large triangular lower addorsal processes, gnathos heavy, triangular, the sides articulated, the end with a strong simple hook; suture of tegumen and vinculum obscure, the other structures all free; vinculum broadened upward, wider than lower end of tegumen, but not as extreme as *Jana* group, and with no gap between articulations of gnathos and valve; valve mostly a hook, but the basal costal part filled with a short, lightly chitinized triangle, representing the costa, which has no sign of a free tip; juxta lightly chitinized, articulating with valves, but the apex recurved and fused with aedoeagus, which is unarmed, and only slightly extended at apex below; saccus like *Apha*, but smaller. Male antenna enormous, plumose (unique in Asia), palpi moderate, but not closely upturned; hind tibiae with upper spurs, frenulum and hook normal. Fore wing with cell moderate, R_1 nearly opposite Cu_2 , well back from apex, M_1 free, mdcv short and slanting in, ldcv sharply angled, but the single M-spur a fold only; hind wing with similar closure, the ldcv longer in proportion as usual, mdcv very short and vertical, M_1 connate; Sc and R well separated, gradually diverging, the cross vein weak. MELL (l.c. 443) figures the genitalia of four further species, which differ in details of valve, uncus and gnathos; also the larva on Oleaceae.

Preptos (oropus) (U.S. Nat. Mus., fig. 50). Clearly related to the neighboring genera, and perhaps closest to *Apona*. Palpi moderate, legs normal; fore wing with R_1 arising opposite Cu_2 , M_1 variable, connate with R-stem or M_2 , or inter-



Figs. 40—45. Male genitalia of Eupterotidae, ventral and lateral aspects. 40—41. *Epijana cosima*. 42—43. *Tissanga pretoriae*. 44—45. *Apha tychoona*.

mediate, mdcv vertical; hind wing with M_1 free, M-spur strong, single on ldcv, which is oblique; Sc and R parallel, connected by a strong cross vein. Genitalia with parts not fused; uncus with one pair of flattened tapering processes, close together, saccus obsolete; juxta complex, an irregular more ventral portion with a short central cone, barely connected with an anellus, which surrounds the minute simple aedoeagus, with minutely scobinate vesica. Ring very wide dorsally, linear ventrally; gnathos-flaps articulated to both uncus and tegumen, very large and lateral only; tegumen and vinculum ankylosed, but uncus free and juxta freely articulated with valves.

I am indebted to the late Dr. SCHAUS for the following description of the caterpillar.

"Length 3—4 inches, not very stout. Head prominent, reddish brown. Body yellow, black between the segments, entirely covered with long silky tufts of yellow hairs, — on each of segments 3 and 4 (meso- and metathorax) are two long dorsal pencils of black hairs; subdorsally on segments 5 to 11 (A2—8) a silky black tuft of hairs. Dorsally the yellow tufts grow towards the black subdorsal ones, forming a thick ridge. Laterally the hairs grow down and slightly backwards. The hairs are extremely soft and silky. Body below black; true legs and abdominal legs yellowish. Feeds on the Liquidambar tree.

"Forms underground thick but very loose cocoon, composed of earth and the hairs on skin. These cocoons are so fragile that it is almost impossible to handle them; they are more like a soft nest. The larvae are very slow of growth and hard to breed.

"Single brooded and very common. The natives consider the hairs on this species very poisonous, but I think they have mistaken it for some of the Megalopygidae."

The long pencils are common in the Apatelodinae, but I have not come across a description of any old world Eupterotine which shows them. Otherwise the larva fits well among the species described by MELL (*Deut. Ent. Zeit.* 1929, 396—494, pls. 7—12).

Ganisa (*postica*, genotype, fig. 18). Genitalia with all organs separate, but suture of tegumen and vinculum incomplete behind; uncus with two divergent triangular processes, and sometimes with minute addorsal teeth besides; gnathos heavy, complete, transverse, without apical process; vinculum very broad at top, with the suture transverse as in *Apha*, but sharply tapering below; valve essentially simple in action, but clearly divided by chitinizations into a short costa, a membranous valvula, ending in a triangular extension, and a narrow hooked sacculus, which may have two or three apical teeth (one and an angle in our specimen, which appears to be *G. p. kwangtungensis*); juxta a simple flat plate, free, aedoeagus simple; saccus as in *Apona*. Antenna normal, palpi moderate, thick, hind tibia with all spurs (MELL); fore wing with cell moderate, M_1 free, nearly connate, mdcv short and vertical, ldcv long and oblique, with a slight angle representing M-spur, upper M-spur at M_2 , R_1 well beyond Cu_2 , normal; hind wing with Sc and R closely parallel to middle of cell, cross vein weak; M_1 free, M-spur single, chitinized slightly, opposite M_2 , mdcv short and straight, vertical, ldcv long, straight and oblique. Pattern essentially as in *Apha*. MELL (l.c. p. 435)

figures genitalia of both species. Larva with hair massing into pyramidal tufts, like *Palirisa*.

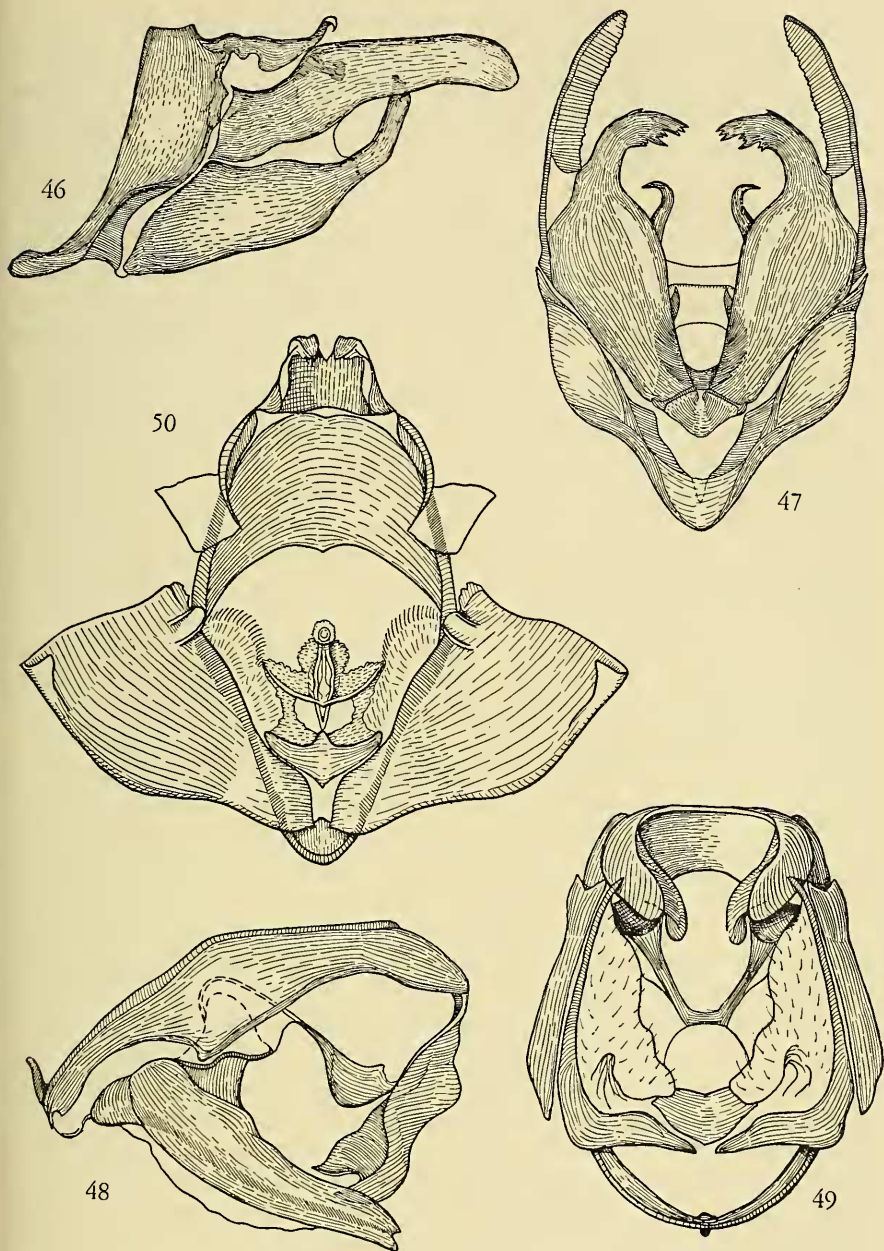
A central genus of this more primitive group, the uncus much like *Apona*, and gnathos fundamentally the same, but the articulation of tegumen and vinculum is of the type of *Apha*, and the valve foreshadows the development of the valvula as a separate, often membranous area, as in the typical *Eupterote* group. I consider it the most primitive of living Eupterotini.

Pseudojana (incandescens, fig. 19). All parts of genitalia free, suture of tegumen and vinculum wide and membranous (like *Apha*) but body of vinculum also partly membranous; uncus with two pairs of slender processes, the dorsal length very great; gnathos starting each side from uncus as a vertical strap (like *Apha*) but turning and running across middle line just above valve, suggesting *Ganisa* and *Stenoglène*; valve simple, ending in a single point, perhaps with faint traces of a short curved costal sclerite (cf. *Apha* and *Ganisa*), juxta small, flat and weakly chitinized; aedoeagus thick especially terminally, with fine cornuti; saccus vestigial, a broad, completely chitinized V. Palpi massive, upturned; hind tibia with all spurs; frenulum normal; fore wing with cell shortish, R normal, M_1 free, mdcv short and strongly oblique inward; M-base strongly forked, the upper branch chitinized, attached opposite M_2 , the lower to a strong angle in ldcv, which is oblique out as a whole; hind wing with M-spurs as on fore wing, M_1 free, udcv being oblique and as long as mdcv, which is nearly vertical; ldcv extremely long, with oblique lower sector. Sc and R parallel to middle of cell, widely separated, with weak cross vein. Cell short. Larva (MELL, l.c., p. 451) densely and evenly hairy, with contrasting red head.

The position of this type is quite clear in spite of its abnormal appearance; the gnathos connects the *Apha* type with the *Ganisa* type, and other structures concur in general. It is somewhat closer to *Ganisa*.

Pseudojana pallidipennis and *vitalisi* do not belong here, but to the central *Eupterote* group (see *Pandala*).

Parajana (gabunica, figs. 20, 46, 47). Tegumen very narrow on middorsal line, as in the typical *Jana* group, flanked by large tapering, hooked sclerites representing the subdorsal processes, but close to middle line; these processes individually with a little power to bend on the tegumen (suggesting that they are all that is left of the uncus, which would be wholly dechitinized on middle line); ring otherwise normal, gradually tapering downward; valves very large, so broad at base as almost to reach processes of tegumen, but correspondingly long; costa less than half length of valve, upcurved, with free spinulose apex; valvula largely membranous, with rounded spinulose apex; sacculus a little more than half as long, with longer upturned spinulose apex, overlapping the valvula; saccus of V-type, but with little membrane and relatively short. No trace of gnathos or clavus; juxta a narrow open U, forking over the aedoeagus; closely joined to the valves and restricting their opening, but free from aedoeagus. Palpi closely upturned, fore legs unarmed, hind tibiae with all spurs; fore wing with moderate cell, R_1 well back from apex, but Cu_1 also well back, opposite it; M_1 connate, dc. veins transverse, curved, each bearing a rather distinct spur, ldcv half longer than mdcv. Hind wing with Sc and R parallel to middle of the rather short cell,



Figs. 46—50. Male genitalia of Eupterotidae, ventral and lateral aspects. 46—47. *Parajana gabunica*. 48—49. *Pseudoganisa currani*. 50. *Preptos oropus*.

cross vein obscure, cell closed by sharply oblique cross-veins, each bearing a chitinated M-spur at upper third, the lower half longer than the middle one.

This genus like *Poloma*, the other African genus of the group examined, shows

some genitalic characters of the Janini, but with normal Eupterotine venation. In this case the narrow, bridge-like tegumen and the presence of a sclerite between bases of valves, are as in *Jana*, and the subdivision of the valve is also Janine, but the great height of valve is a Eupterotine feature. The five specimens at hand run 4 *gabunica* ♂, 1 *lamani* ♀, suggesting these are merely dimorphic sexes, and confirming GAEDE.

Poloma (angulata, fig. 21). Tegumen extended dorsally, the uncus fused dorsally, but quite separate on sides, bearing two pair of cylindrical processes, as in *Pseudojana*, the lower pair movable on the tegumen; vinculum much narrowed, fused but with traces of a suture; gnathos a great unpaired tongue-shaped process, with two slender dorsal extensions which articulate with the lateral ends of uncus on their inner face; valves fundamentally simple, suggesting *Apha*, but with the costa still traceable as thicker chitination, curving sharply dorsally and ending in a point near apex of valve (as in some of the *Apha* group), sacculus area also a little more heavily chitinized; juxta free, a wide-open V, also with a chitination between bases of valves as in *Parajana* and *Hoplojana*, but not so clearly developed. Saccus as in *Apha*, but more lightly chitinized, almost membranous in the middle. Palpi moderate, not upturned; hind tibia with all spurs; fore wing with cell moderate, radials normal, M_1 connate, mdcv about half as long as ldcv and erect, the ldcv sharply bent, with lower portion strongly oblique; one spur on each, or the upper at M_2 ; hind wing with normal frenulum, Sc and R closely parallel toward base, with cross vein obscure; R and M_1 stalked, mdcv short, bearing upper spur, and ldcv very long, bent and bearing the lower spur.

A rather distinct genus, fairly close to *Ganisa* and *Parajana*, but also not far from *Tissanga*, if one omits from consideration the latter's unique features.

Pseudoganisa (currani, figs. 22, 48, 49). Tegumen broad, of even width, not separated from the sharply tapering vinculum; uncus separate, obsolete in middle line, composed of a pair of large subdorsal lobes with a deep emargination between them as in the Janini. Gnathos unique, evidently fused with the dorsal part of anellus, at sides articulating with uncus, separated by a wide area of membrane from tegumen proper, forming a convex boss, lower part narrow, but widening into a middle plate, which fuses with aedoeagus dorsally; valve with costa inwardly enlarged into a plate, the free portion very short, with no free tip but distinct and heavily chitinized, encircling a large setose area; most of valve a large and mostly membranous valvula, without apical chitinizations, but deeply grooved and enveloping the spine-like sacculus, the outer face most definitely chitinized and ending in a point. Juxta free, a flat hexagonal plate, ending in a double extension; saccus a minute reëntrant spike; aedoeagus simple and unusually small. Palpi good sized, closely upturned; legs not examined; fore wing bent and hind wing angled at M_3 ; frenulum normal; fore wing with cell very short, almost semicircular, costal boundary to M_3 forming an arc, while the posterior side is almost straight; R_1 stalked on R_3 beyond origin of R_4 (unique in this series); udcv longer than mdcv and longitudinal; mdcv also long and nearly longitudinal, bent, but without obvious spur; ldcv longer and more oblique, also bent without obvious spur; hind wing with the short stem of R and M_1 arising at barely half length of cell, mdcv long and bent, ldcv very long, oblique and straight; Sc and R in contact near to base, rapidly diverging.

A most curious genus, obviously of this series, but unique in many characters, presumably limited to the Philippines. The deeply emarginate uncus suggests the Janini, but in none of the latter is it free from tegumen; the large well defined valvula, mainly of membrane, is suggestive of the *Eupterote* group, but the valves and aedoeagus are still free and fully functional. Presumably the placing in „Seitz” is accidental, perhaps due to late inclusion.

In the group as a whole the central genus is *Ganisa*, with *Apona* and *Pseudojana* closest to it, but diverging in exactly opposite directions; *Preptos*, *Apha*, *Parajana* and *Poloma* are clearly connected, while *Melanotbrix* is somewhat more aberrant. The most distinct is *Pseudoganisa*, by a wide margin. *Tissanga* is obviously an offshoot, in spite of its curious features, and comes closest to *Ganisa* and *Poloma*. The genitalia show clearly that *Poloma* and *Tissanga* lead up to the Janini, while *Pseudoganisa* is perhaps nearest (not at all near) to the ancestor of the more normal Eupterotini.

Primitive condition. At this point we may consider the question of primitive and specialized in the group. The chief generalized features which occur in the preceding and not in the following genera are movable articulations between the parts. We may also consider the complete gnathos and the simple valve as primitive features, since no member of the family shows any trace of a true clasper. It will be noted that this group have a notably marginal distribution, including African, American, Palaearctic and endemic Philippine types.

genus	uncus free	vinculum with suture	aedoeagus free	valves free	gnathos complete	valves simple
<i>Ganisa</i>	+	+	+	+	+ ¹⁾	+
<i>Pseudojana</i>	+	+ ²⁾	+	+	+	+
<i>Apha</i>	+	+	+	+	—	+
<i>Apona</i>	+	—	+	+	+	—
<i>Preptos</i>	+	—	—	+	—	+
<i>Poloma</i>	— ³⁾	— ⁴⁾	+	+	+ ¹⁾	—
<i>Pseudoganisa</i>	+	—	+ ⁵⁾	+	+	—
<i>Melanotbrix</i>	+	— ⁶⁾	—	+	+	—

¹⁾ A free chitinized flap as well as the transverse chitinized strip in membrane.

²⁾ An actual strip of membrane intervening between tegumen and vinculum.

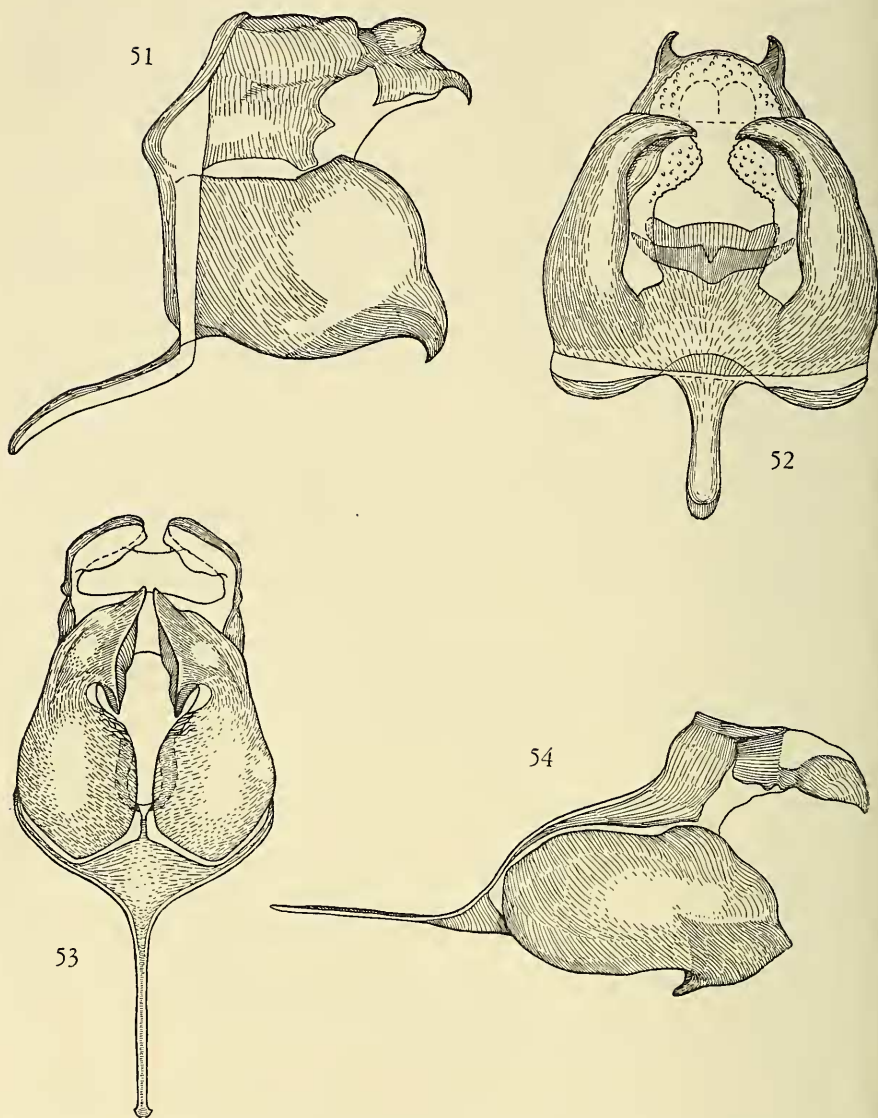
³⁾ An open suture at sides only, not free to move.

⁴⁾ A faint trace of the internal supporting ridge.

⁵⁾ Free so far as fusions go, but so solidly connected to gnathos by membrane as to have little power of movement.

⁶⁾ Suture represented by an internal supporting ridge only.

The remaining genera of Eupterotini up to *Striphnopteryx* form a more closely knit group, some of them being of doubtful validity, though a few (e.g. *Marmaroplegma*, *Nisaga*) show more striking features. The normal characters are: hind tibia with end spurs only (except *Dreata*), frenulum and hook normal (except *Marmaroplegma*), fore wing with R₁ normal, arising before or opposite Cu₁; M₁ stalked, except the two African genera, *Marmaroplegma* and *Janomima*, in which udcv is long and longitudinal; and *Pandala* according to HAMPSON's figure,



Figs. 51—54. Male genitalia of Eupterotidae, ventral and lateral aspects. 51—52. *Mar-
maroplegma paragarda*. 53—54. *Sphingognatha styx*.

to which a couple of species of "*Tagora*" should be transferred; M-spurs variable, even within the genus *Eupterote*, uncus, and tegumen fused (the suture most distinct in *Dreata*, *Sphingognatha* and *Sarmalia*), also tegumen and vinculum, valves usually fused with each other near base or with juxta, so that they cannot be opened, juxta with a recurved upper portion, fused to aedoeagus and limiting its motion, the valves sometimes fused with vinculum also, uncus with a pair of

processes, usually small and located well toward middorsal line, gnathos always absent, at most with slight lateral chitinous bars; valve always complex, shorter than high, the costa not developed as such, but often with a basal chitinous bar, easily mistaken for a vestigial side-lobe of a gnathos, valvula usually large and ending in a spine, and sacculus usually with a striate organ outwardly on its inner edge (except *Janomima*, *Marmaroplegma* and *Palirisa*). The fore tibia has a claw only in *Nisaga*, the mid tibia never. The group is almost wholly Oriental, though two African genera (*Janomima* and *Marmaroplegma*) appear to be outliers, and the single New Guinea species examined ("*Eupterote*" *styx* though not a true *Eupterote* is certainly a member of the group (see *Sphingognatha*). Superficially the combination of only two spurs on hind tibia with M_1 stalked in both wings marks most of the genera, but is also shared by *Phyllalia* and the derived *Phiala* and *Colana* groups; the striate area marks this group when present, but is absent in several genera, and also reappears in *Phiala* (*Stibolepis*).

Janomima (*mariana*, genotype) (U.S. Nat. Mus., fig. 23). Uncus-lobes with ragged ventral extensions in the basal membrane, articulating or nearly so with costal articulation of valve, and representing a vestige of the base of gnathos; valve with a large area of membrane costo-basally, completely separating a bar-like basal sclerite from the rest; valvula well chitinized, ending in a double point; sacculus with a large hairy lobe on ventral edge, but not striate. Fore wing with udcv long and longitudinal, R_1 forking back far toward base, even before Cu_2 , mdcv variable, oblique when long; ldcv rather strongly angled and oblique, normally bearing both M-spurs, but separately. Hind wing with Sc and R parallel, but well apart, the cross vein rather weak.

An abnormal, perhaps somewhat primitive member of the *Eupterote* group. The genitalia are almost normal, save for the absence of the striate area, which is replaced by a hairy pad, and show nothing of the special features of the following, which on venation might be thought related.

Marmaroplegma (*paragarda*) (U.S. Nat. Mus., figs. 24, 51, 52). Similar; tegumen with a pair of small addorsal bumps and base of uncus with a pair of hooks, causing a slight suggestion of *Sphingognatha* and *Phyllalia*; side chitinizations (gnathos?) obsolete; costal articulation of valve represented by a continuous strip, its basal portion corresponding to the articular sclerite of the preceding, but running out to a gradually fading strongly arched chitinized costal edge; ring crossed by a membranous strip opposite its beginning, which may represent the tergo-sternal articulation, but seems too high in relation to the valve; valve and vinculum fused; valvula tapering to a single point; sacculus very short, squarely cut off, fusing with its mate and inwardly with the very strongly concave juxta (unique). Aedoeagus strongly tapering, basally very thick. Palpi very short, hind tibia with end-spurs only, frenulum obsolete; fore wing with R-system like *Janomima*, but ldcv more deeply angulate and M-spur single; hind wing with Sc as before, udcv long and longitudinal, M_1 and $_2$ stalked, and ldcv deeply angulate with a single spur, corresponding to fore wing.

A very distinct genus, with some resemblance to *Janomima* both in genitalia (e.g. lack of striate area) and venation (long udcv).

The genotype of *Pandala* has not been seen. The features given by HAMPSON

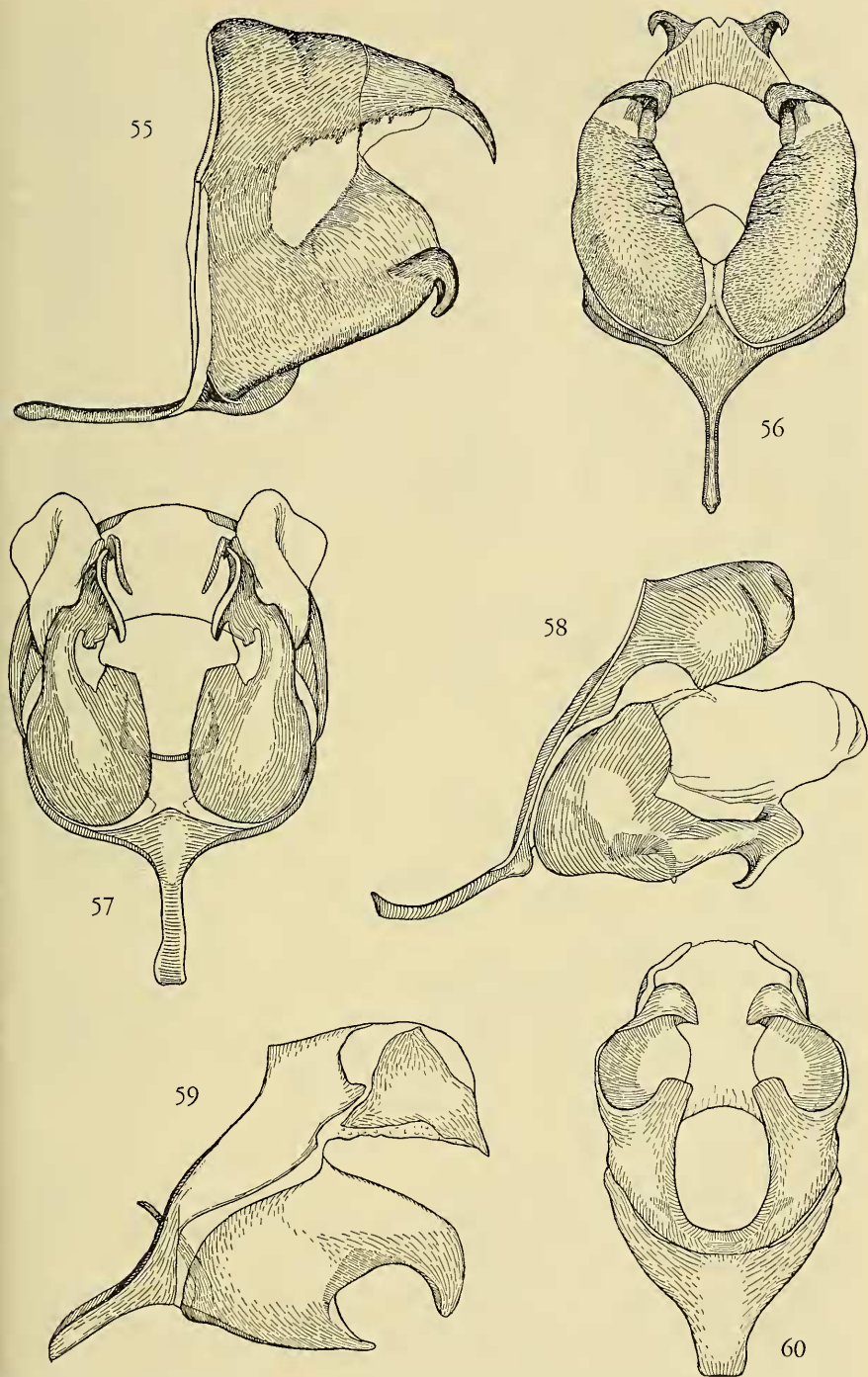
suggest close relation to *Marmaroplegma*. „*Tagora*” *pallidipennis* and *vitalisi* show essentially the same venation, since udcv, while shorter, is still more longitudinal than transverse, and longer than mdcv, which latter is even absent in *pallidipennis*. The genitalia are also essentially as in *Marmaroplegma*, and quite unlike *Sphingognatha* (*Tagora* of authors).

Palirisa (*lineosa*, genotype, and *cervina*). Uncus with two short triangular process followed by an independent transverse sclerite, and the latter by a chitinous vinculum abruptly narrowed, valve strikingly different in the two species, both with the sacculus taking the form of a squarish ventral lobe, but *lineosa* with this process followed by an independent transverse sclerite, and the latter by a chitinous nodule ending in a small sharp hook, which is united to the inner edge of sacculus behind the transverse bar; the valve proper also ending in a larger hook. One would suspect this assembly represented the true clasper, save for the fact it is found nowhere else in the family. In *cervina* there is no special modification before the transverse bar, which is less independent, and the following area is a vague chitination with a single sharp ventral point. Juxta completely fused, in *lineosa* fused to and reflected from the fused bases of the sacculi, in *cervina* much further out, but smaller, attached to the base of the semi-independent sclerite which bears the two square angles. Saccus broad and thick, blunt and fully chitinated (rather like *Apha*), wider than aedoeagus, which has some internal scobinations. Palpus moderate, frenulum and hook normal; closure of cell varying in the species; *lineosa* with R_1 from apex of cell, opposite Cu_1 ; M_1 stalked, mdcv short and reëntrant, bearing a strong M-spur; ldcv much longer and straight but strongly oblique out, unlike the Janini. Hind wing with Sc and R widely separate, parallel, connected by a fairly good cross vein, parallel to R even beyond end of cell; M_1 nearly connate, mdcv angled, full as long as the oblique, straight ldcv. In *P. cervina*, etc., fore wing similar, but sometimes with relatively longer mdcv; hind wing with mdcv often longer and sharply angled, and ldcv nearly erect.

A very distinct type, which might well be divided in two genera. The *cervina* group has a venation exactly like some Janini, but definitely Eupterotine genitalia, and is also distinguished from all Janini examined by the loss of the upper spurs of hind tibia. The complex valve of *lineosa* is so unlike anything in the family that I cannot homologize the parts; like *P. cervina* and the two preceding genera it has the small triangular lobes of uncus, but no striate area. MELL attempts to distinguish the species of the *cervina* group in *Deut. Ent. Zeitschr.* 1937, p. 16; see also 1929, p. 471. The larva has pyramidal hair-tufts like *Ganisa*, but this must be convergence.

In all the rest of this series the genitalia are even more homogeneous, the valve always ending in a blunt process (tip of valvula), and the sacculus having a striate area on its posterior border (a little weak in *Sphingognatha*), resting against the aedoeagus. The articulation may be well formed, or completely ankylosed with the ring. *Dreata* stands out in having upper spurs on the hind tibia, *Nisaga* in the fore tibial claw, *Sarmalia* in the small eyes, but the other genera differ mainly in minor points of venation and size of palpus. M_1 is stalked (rarely connate in fore wing), except in *Sphingognatha patula*.

Dreita (*hades*, fig. 25). The only genus of the group with all tibial spurs



Figs. 55—60. Male genitalia of Eupterotinae, ventral and lateral aspects. 55—56. *Sarmalia* spec. 57—58. *Phyllalia patens*. 59—60. *Cotana erectilinea*.

preserved; but otherwise normal, the genitalia more advanced than *Sphingognatha*. Palpus moderate. Fore wing with M_1 at normal position but the cell closure so oblique that it is almost opposite Cu_2 ; mdcv sharply angled, bearing an M-spur in both wings, oblique as a whole; ldcv also oblique, bent, with a spur. Male genitalia much like *Eupterote*; tegumen and uncus separated by a distinct groove, also with a longitudinal groove, separating four dorsal bulges, and base of uncus-hooks hairy, but without the definite tufts of *Sphingognatha*; the terminal hooks pointing ventrad. Valve with complete articulation laterally, but fused with its mate ventrally; the membranous area at base of costa small; gnathos represented by a chitinous bulge.

Sphingognatha (*pallida*, *patula*, *styx*, figs. 53, 54) (*Tagora* auct., not as restricted by MOORE). Middle discocellular in fore and sometimes hind wing about half as long as lower and bearing the upper M-spurs; hind wing with Sc and R parallel, discocellulars of both wings oblique, or lower of fore wing nearly vertical; palpus large. The genitalia are similar in *pallida* and *patula*, which differ widely in venation. They have the valve completely defined, though fixed by fusion to juxta, the costal and basal edges chitinized, though followed by a membranous area; apical process turned inward, recurved in *pallida*, projecting in *patula*; stridulating area small in *pallida*, replaced by a long terminally dentate process on a separate sclerite in *patula*. Uncus with two lobes terminally, turning abruptly downward, their bases hirsute and separated by a dorsal groove; distinct traces of uncus-tegumen suture and base of gnathos on sides. A well-marked genus, the two species examined strikingly distinct, but linked by the relatively long mdcv and distinctive uncus. It is the genus with most resemblance to *Dreata* and probably most primitive.

„*Eupterote*” *styx* (Mus. Comp. Zool.) from New Guinea, fits best in *Sphingognatha* as genera go in this series. The chief differences are R_1 arising about opposite Cu_2 , mdcv on fore wing oblique in and shorter than ldcv, which bears the median spur; in the genitalia the stridulating area is small and sessile, but other differences are slight. It differs immediately from true *Eupterote* by the much larger closely upturned palpi.

Eupterote. Cell closure extremely variable (see fig. 61). Palpi always short and drooping, especially in female; hind wing with Sc and R sharply diverging beyond the cross veins, like *Tagora* and *Sarmalia*, unlike the preceding. This genus and *Tagora*, which can be separated from some species of *Eupterote* only by the larger palpi, represent the central type of the tribe.

Tagora (*Mallarctus*). Similar, M-spur definitely single, on ldcv at least on fore wing. Palpi larger.

Sarmalia (figs. 55, 56). As defined this is an endemic genus in the Philippines, but really differs from *Eupterote* only in the immaculate coloring and small eyes, obviously much narrower than front, with a naked strip of chitin in front.

Messata (with *Sangatissa*, *plumipes*, *citrinula*). HAMPSON sunk this genus name to *Eupterote*, and proposes a new genus for *citrinula*, but *plumipes*, named by MOORE the type of *Messata*, is in fact much closer to *citrinula* than to the normal *Eupterote*, and I believe the name *Messata* must be used for the genus. The obvious superficial feature is the strong slant of the postmedian line, which

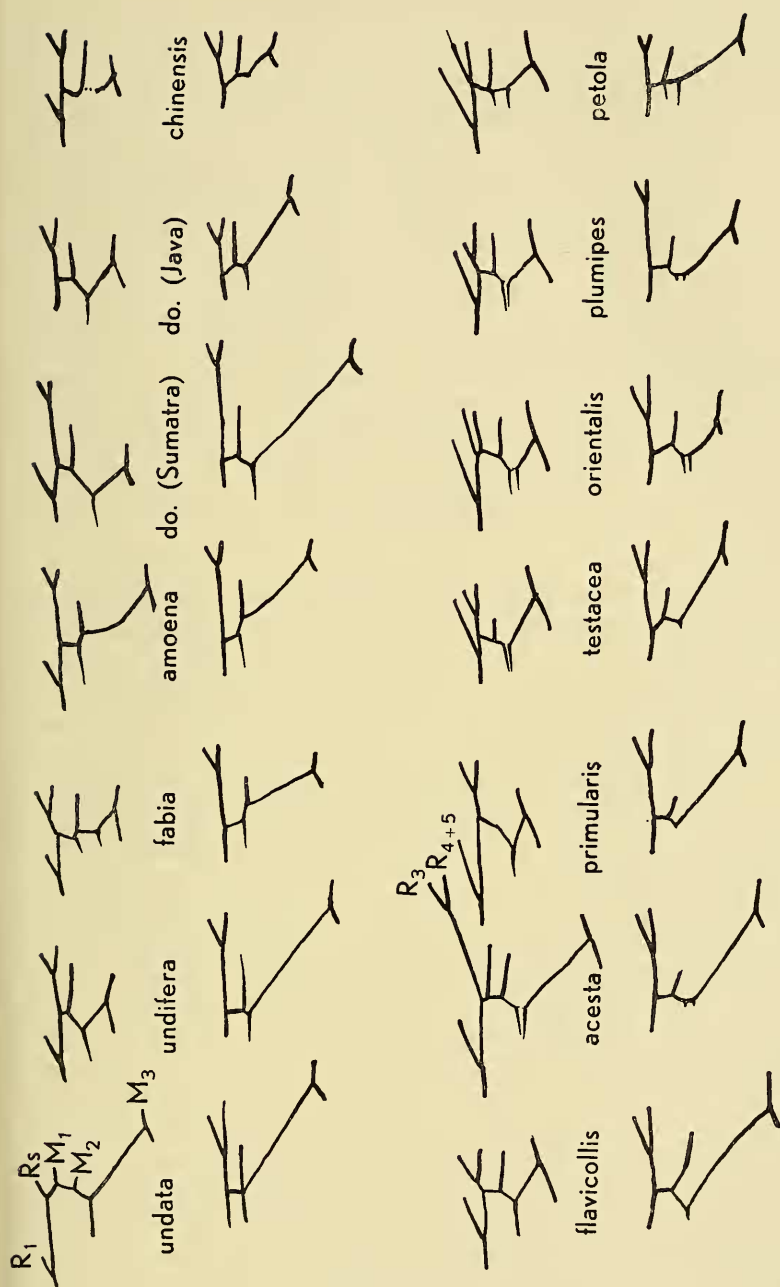


Fig. 61. Cell closures of *Eupterote* (diagrammatic), fore wing above, hind wing below the names. Determinations as of U.S. National Museum, but not critical.

reaches the inner margin near the base; structurally it is close to *Eupterote*, but differs from the normal species in the stalking of M_1 , and in genitalia by the more heavily chitinized apex of the valve, which is everted and grooved rather like the lip of a pitcher.

Nisaga (simplex). A variant of *Eupterote*, with the same type of genitalia; differing mainly in the striate pattern, claw of fore tibia, more parallel Sc and R of hind wing, and plumose antennae.

Here begin a series of African genera, evidently connected with an early level of the *Eupterote* group, by the valve and juxta, which are of the form of *Eupterote*, but with the valves still articulated, like *Sphingognatha* and its relatives. The first two represent a group which may also contain several genera not studied (*Homochroa*, *Bantuana*, *Schistissa*, *Paraphyllalia*, or part of them). They are not close to each other, but agree in having a strongly humped tegumen, and in having no traces of the processes of the uncus, which all the Asiatic Eupterotini show strongly. *Striphnopteryx* shows a distinct stridulatory area (about as in *Sphingognatha*), while in *Phyllalia* it is replaced by a chitinized hairy lobe, as in *Janomima*. I have separated the remaining genera as a tribe Phialini, since while on most structures they could easily be a further degeneration of the same type, some species of *Phiala* have preserved R_2 , otherwise present in this subfamily only in *Cotana*, which in its own way presents the same problem. All have lost the processes of the tegumen, and in the smaller *Phiala* species the whole tegumen area is membranous.

Striphnopteryx (edulis, figs. 57, 58). Palpi longish but drooping; antennae unusually long; hind tibiae (as in all the following genera) with end-spurs only. Fore wing with R_1 opposite Cu_2 , M_1 free, mdcv very short and straight, spur on upper part of ldcv; hind wing with frenulum minute, Sc parallel to cell to middle, but without a distinct cross vein; M_1 free, mdcv rather short, straight and oblique, spur near upper end of the long oblique ldcv. Male tegumen high and swollen, with a high double dorsal bulge, uncus a transverse bolster without processes; juxta and valves of *Eupterote* type, the valves separate from vinculum and each other but completely ankylosed to the juxta. Saccus very slender. A distinct type, obviously related to the lower level of the *Eupterote* stem (*Sphingognatha*) but not very close to any other genus.

Phyllalia (patens, figs. 26, 57, 58). Probably related to the preceding. Antennae moderate, palpi small and drooping; fore wing with R_1 near end of cell, M_1 stalked, mdcv short and erect, the ldcv deeply and sharply reëntrant, with spur near its middle; hind wing with frenulum minute, as in *Striphnopteryx*, Sc widely arched on basal half of cell, with the cross vein at middle of cell and then closely parallel on outer portion. Closing veins as in the preceding, but M_1 connate. Male with tegumen arched, the uncus not distinct from it but indicated by a pair of hairy areas, suggesting *Tissanga*, with two sharp spines of uncertain homology on its inner face at sides of anal tube. Juxta and valves of Eupterotine type, but the latter with a strong reëntrant spine projecting down from its chitinized apex and a large membranous lobe on outer face. No striate patch, but the corresponding area forming a prominent densely hairy chitinous lobe, suggesting *Janomima*. The fore tibia has the rudiments of a terminal claw and the genus appears about half way between the *Eupterote* and *Phiala* groups. Where *Striphnopteryx* has an unusually complete and primitive pattern, this genus is essentially immaculate.

Schistissa. Not seen. By the published data a form with pattern (or lack of it)

of *Phyllalia* and the large antennae of *Striphnopteryx*; AURIVILLIUS notes the palpi are long, the mdcv of hind wing about as long as udcv, i.e., with the deeply reentrant ldcv of fore wing like *Phyllalia*, but M_1 free like *Striphnopteryx*.

Paraphyllalia. Not seen. As given by GAEDE it has the head of *Phyllalia*, the pattern of *Messata*, M_1 of fore wing free and cross vein R_1 of hind wing absent.

Bantuana. Not seen. Palpi drooping, shortish; fore tibia with terminal claw; fore wing with M_1 and $_2$ stalked; brown, with dark postmedian and white discal spot. I suspect this is an outlier of *Phiala*. Fore wing with $M_1 + _2$ connate with R-stem; mdcv incurved; hind wing with M_1 stalked, mdcv and ldcv as in *Striphnopteryx*, etc.

Stibolepis and *Phiala* (several species). These two nominal genera cover a wide variation, but with many intermediate steps, and it is disputed whether they can be held separate. In their normal conditions though, they are well distinguished. Both have terminal spines on both fore and mid tibiae, and simplified markings on a frequently white ground; on the fore wing R_1 arises far back, opposite or even before Cu_2 , M_1 is stalked, mdcv very short and ldcv very long and reentrant; in the hind wing M_1 is stalked and mdcv corresponds to the fore wing. In normal *Stibolepis* vein R_2 is never present, the hind wing has a functional frenulum and hook, and moderately arched base, with veins Sc and R gradually diverging. In *Phiala* R_2 often appears as a branch of R_3 , though it may be unstable within a single species, or even on the two sides of a specimen; R_1 arises well before Cu_2 , ldcv is more deeply reentrant; the hind wing has the frenulum reduced and non-functional, the base of costa highly arched, and the bases of Sc and R arched on basal third of cell or more, mostly in contact or even partly fused. I have confirmed these characters on normal species, but have seen the genotypes of neither. Male genitalia in both with dorsal portion mostly membranous; valves of *Eupterote* type, with very large aedoeagus and very long and slender saccus. In *S. cunina* and *hologramma* the tegumen is a lightly chitinized transverse strip, the uncus represented by two small flat chitinizations in membrane, the valves with reentrant processes from apex, like *Phyllalia* but heavier, the streated patch distinct on a chitinized base, and the saccus about as long as rest of genitalia, a little more or less. In *Phiala marshalli* the whole dorsal portion is membranous and much reduced in size, the juxta is so nearly membranous that the valves are released and can be opened, the valves have the recurved terminal portion triangular and not spike-like and the striate area vestigial, and the saccus is very large and several times as long as the rest of the ring.

At the species level, *Phiala* is in great confusion in American collections, and to judge by the figures in "SEITZ" in some old world collections as well. The following notes may decrease the confusion a little. The only types seen are HOLLAND's but a number of the species are based on original figures.

GAEDE in SEITZ defines the subgenus *Stribolepis* on the black antennae (pectinations as well as shaft). On this basis *uelleburgensis* Strand must be added, and the following key may be useful. We have both sexes of *cunina* (Carnegie Museum) and the female is darker than the male, in one case with solid dark border, obliterating the white subterminal line; but *ochriventris* may still be the female of *albida*.

1. Wings with heavy black veining, but no transverse pattern; male with apical third heavily darkened but cell Cu₁ notably paler; female with veins M₂ and M₃ notably darkened before outer margin *uelleburgensis* Strd.
- Wings with conspicuous transverse pattern 2
2. Outer half of wing evenly fuscous and contrasting, except for costal area and a broad postmedian stripe *sabalina* Rbl.
- Outer half of wing with more complex pattern, the border when solidly dark (*cunina* var.) much narrower, with irregular inner boundary 3
3. Terminal area with dark fuscous triangles or more evenly blackish, the bars on veins faint or obliterated *cunina* Stoll
- Terminal area pure white or lightly shaded with fuscous; the terminal bars on veins contrasting (*albida* Plötz) 4
- Terminal area with black zone set back from border, zigzag and followed as well as preceded by a white zigzag line *ochriventris* Strd.
4. Subterminal series of lunules conspicuous and almost black toward costa and in cells M₃ and Cu₁ *typical*
- This series of lunules of pale gray dusting, and inconspicuous against the white area before them form *abluta* Holl. (types)

All the other species examined which have been placed by one or another author in *Stibolepis*, have the pectinations of the antenna yellow or yellow-brown, though the shaft is often black and white.

"*Stibolepis*" *hologramma* Auriv. A pair in the Carnegie Museum have no resemblance to the figures in SEITZ, but match the original figure nicely, having eight almost equally strong wavy black lines on a powdery white base, and a barred white and gray fringe. One in the U.S. Nat. Mus. is much more heavily suffused with gray powdering, and suggests that *S. infuscata* Strd. may be an extreme form. I know nothing and no figure like the one in SEITZ, with yellowish fringe and one median line much accented.

P. pagana Strand. If I am right this is the largest of the normal *Phiala* pattern. It was described on a female expanding 68 mm, like the smallest one in the Carnegie Museum; but a good series of both sexes shows this is a minimum, and the female may go to 80 mm. The postmedian band varies from nothing to a heavy band, but is always indefinite and made of fine black dusting. When of intermediate strength it breaks into spots between the veins, unlike *strigifera* Strd., which is certainly another species. The specimen of *strigifera* before me is more heavily marked than the SEITZ figure, but evidently the same. I have no idea what *alba* Auriv. and *alba* GAEDE (in SEITZ) are, but the AURIVILLIUS description does not match at all well to the SEITZ figure.

P. costipuncta H.-S. Here the HERRICH-SCHAEFFER and the SEITZ figures certainly fall in separate species groups. The first has a postmedian line like *simplex* in tending to break into pairs of dots *between* the veins, but the series on fore wing is straight and oblique. The SEITZ figure is of something in the *marshalli* group, with black dots *on* the veins. It will belong with the "synonyms" *atomaria* and *punctilinea* Walker, and *xanthosoma* Wallengren, not Snellen; in fact I believe that *marshalli* is actually *punctilinea*.

P. polita Distant. We have this from Rhodesia; I strongly suspect it is the female of *flavipennis* Wallen., being merely a much deeper yellow, aside from sex differences. The SEITZ figure is completely miscolored (brown).

Trichophiala, as described by AURIVILLIUS, appears very close to *Phiala*, but lacks the fore tibial spine; R_2 is present. The frenulum (♀) is reported absent.

Teratojana Hering, by the original description, is very close. It is compared with *Phyllalia*, but the anastomosis of Sc and R of hind wing shows it belongs here. Superficially it differs from *Trichophiala* and *Lichenopteryx* by the simple pattern, with a single postmedial line on both wings, but no tangible structural differences are given. The frenulum is not mentioned.

Lichenopteryx (despecta) agrees in most features, but has a fully functional frenulum and hook; the costa of hind wing is arched, and bases of Sc and R in contact and strongly curved, as in *Phiala*, but for a shorter distance. Fore tibial spine vestigial. Male genitalia similar to *Phiala*, the valves immovably ankylosed with the ring and each other, the juxta with a distinct V-shaped chitinization; the uncus represented by a slight pair of chitinizations and the saccus rather shorter, about twice height of ring. This genus is a slight variant of *Phiala*, differing essentially only in the lack of tibial spines.

Cotana (erectilinea), figs. 2, 59, 60). This genus, with one or two others which are not at hand, should probably be made a separate tribe. As in the case of the Phialini, we have an outlying group (in this case Australasian) distinguished by one primitive feature, the preservation of R_2 in fore wing, with genitalia of a degenerate *Eupterote* type and in this case highly specialized venation. (Note that R_2 is not sharply defined and may be a false vein.) Scaling as in normal Eupterotinae, very deep and multidentate; palpi minute and drooping; hind tibiae with end spurs only. Fore wing with R_1 arising from R-stem close to base, closely parallel to Sc its whole length and easily overlooked, R_2 out of R_3 , minute, irregular or even duplicated; M_2 , M_1 , R_5 and R_4 , successively out of stem of R_3 , which is widely separated from R_1 to origin of R_4 , then runs abruptly across to it and is connected by a short cross-vein; cell minute, ldcv very short, angled at upper end, M_3 , Cu_1 , Cu_2 separate. Hind wing with frenulum strong, Sc fused to cell at base, then abruptly divergent; R and M_1 stalked, M_2 connate from upper angle of cell; the rest as in fore wing but cell more obliquely closed. Male genitalia of *Eupterote* type; all parts fused. Tegumen-uncus rather long, ending in two weak but definite angles, valve with terminal and saccular points, separated by a semi-cylindrical hollow, which is wholly chitinized, unlike *Eupterote*, etc.; no striate area; saccus broad and triangular, like the *Apha* group.

A good sized genus, almost confined to New Guinea. The female is strongly dimorphic in appearance, but not in venation.

Melanergon (not seen). Similar, but with slightly more advanced venation; sexes similar, translucent.

Paracydas (not seen). Similar in structure and pattern, with slightly less advanced venation; probably not distinct.

The three following genera are so completely out of line with the preceding and each other, that on the same scale they deserve a subfamily each. I believe that they, in fact, are closer to the New World Apatelodinae, than to the other old-world genera. All agree in lacking the fluffy fine-toothed scaling of the Eupterotinae, and have normal imbricate but narrow underscaling and well differentiated more or less hair-like overscaling, which is dense enough to give distinctive velvety ef-

fect only in the first genus. The larvae are known for *Panacela* and *Sesquiluna*, and both are social, unlike most of this series. *Panacela*, according to FROGGATT, *Forest Insects of Australia*, Sidney, 1923, pp. 61—63, figs. 1—3, is social in a bag. It has dense hair from tufts, mixed with poison spines, exactly like the Thaumetopoeidae, but there is no trace of a tympanum in the adult. It pupates in the bag. *Sesquiluna albilunata*, according to the original description, is also densely hairy, but has two pairs of spines at the anterior end and a single posterior spine, unlike any known member of the Eupterotidae or Bombycidae, but more like some species of the latter. It pupates in a strong cocoon.

PANACELINAE

Panacela lewinae (*rufescens* Walker, *Lewinibombyx* Strand). Vestiture deep, largely hairy; eyes small, buried in very long lashes, naked; palpi minute; antennae normal. Hind tibiae with end spurs only. Wings similar to *Cotana* in pattern and many points of venation, similarly dimorphic; fore wing with R_1 from near end of cell, free, R_2 obsolete (perhaps represented by a weak cross vein connecting R_3 and R_1); M_2 , M_1 , R_5 and R_4 successively out of R_3 , as in *Cotana*, but the latter merely curved, not going sharply across to R_1 ; cell small, dcu reëntrant, bent and spurred near middle; M_3 and Cu_1 long-stalked. Hind wing with strong frenulum, Sc and cell fused close to base, then sharply divergent, R and M_1 stalked, M_2 out of their stalk; M_3 and Cu_1 , stalked, ldcu oblique and angled well above middle; inner margin with barred pattern and anal angle lobed as in Apatelodinae, also *Epijana*, but few other Eupterotinae. Male genitalia with ring very slender dorsally, without trace of uncus; laterally broadened but lightly chitinized, bearing enormous subdorsal membranous flaps, with no suture setting off valves or juxta, the valves perhaps represented by a pair of spines (costa ?) and a pair of spoon-shaped flaps (sacculus ?), growing separately out of the ring; aedeagus normal, attached to ventral part of ring by a chitinous flap, obviously representing the folded juxta of the *Eupterote* type; saccus normal, cylindrical, being almost the only normal feature of the genitalia.

This curious genus shows a venation that might be easily placed as the origin of *Cotana*, but without the distinctive scaling which *Cotana* shares with other Eupterotinae, and absolutely unique genitalia. It has had a hard time in classification; — was originally described in the Saturniidae, put in the Lasiocampidae by KIRBY, as an appendage of the Lymantriidae by STRAND in "SEITZ", to the Bombycid genus *Ocinara* by FROGGATT, and as a separate genus of Bombycidae by TILLYARD. The SEITZ figure is unrecognizable, but TILLYARD published a photograph of the male in the *Insects of Australia and New Zealand*. FROGGATT's figures are also satisfactory.

PRISMOSTICTINAE

Prismosticta (*fenestrata*). Palpi rather short, rather closely scaled and not drooping; eyes smallish, hairy (unique in the series), antennae normal; hind tibia with all spurs. Wing scaling normal, the under scales regularly imbricate and

upper scales somewhat narrow and strap-shaped, but conspicuous; R_1 from near end of cell, normal, $R_3 + 4$ stalked furthest, R_2 out of their stalk, and R_5 from near its base; M_1 connate, M_2 from middle of end of cell, both discocellulars being moderately curved and bearing spurs; hind wing with Sc and R fused near base of cell, then sharply divergent; R and M_1 short-stalked, mdcv as in fore wing, the ldcv longer and more oblique. Frenulum normal. Fore wing with a transparent subapical spot with reduced scales as in *Apatelodes*. Male genitalia with tegumen and vinculum articulated, the tegumen taking full two thirds of the ring; uncus distinctly separated, but not movable, bearing two long massive processes, each with a dorsal tooth (suggesting *Apona* or *Pseudojana*, not *Apha*); gnathos articulated to base of uncus, a long heavily chitinized strap looping from side and bearing a spinose middle lobe; valves articulated, with narrow base, the outer face nearly simple, but with an oblique thickening from base of costa to point where sacculus no longer forms ventral edge of valve; costa normal, valvula a simple lobe, sacculus ending in a large free spine on inner face of valve, simulating a clasper (as in *Catocala* !); juxta a flat plate, with a circular hole for aedoeagus, which is very short, but has a very long eversible membrane bearing a single cornutus in the species examined; saccus obsolete.

A curious genus, resembling the *Apha* group, though not *Apha*, in dorsal structures, but totally different in valve and all other structures. How STRAND could actually sink it to *Apha* is a mystery. It may be considered an outlier of the *Apatelodes* group, which it resembles superficially, but already a long step toward the ancestor of the Eupterotinae, as shown by the gnathos and radial venation. *P. hyalinata* Butler was also obviously correctly placed here, and GRÜNBERG discusses it too as an *Apha* in "Seitz", vol. 2.

APATELODINAE

Body structures normal, usually with well developed palpi; wings with normal scaling, the overscaling narrower than the regularly imbricated underscaling, but of the same type, fore wing with radial sector forking into $R_2 + 3$ and $R_4 + 5$, the former with a short terminal fork (rarely unforked), the latter with a well developed fork, M_1 usually from upper angle of cell or barely stalked, mdcv and ldcv more or less equal. Hind wing with Sc and R parallel on basal part of cell; then usually gradually diverging; frenulum and hook almost always well developed. Male genitalia large in proportion to size of moth; eighth abdominal segment frequently with terminal modifications, often very complicated. This is an American group, save for the following single species; it would appear ancestral to the rest of the family, and perhaps to the Bombycidae as well. Larva about as in the Eupterotinae, but commonly with a series of thin dorsal hair-pencils, like *Preptos*.

Sesquiluna gen. nov.

Similar to *Apatelodes*, with normal scaling, Rs stalked as above, R_4 convex and running to apex, R_2 short. Differing in the minute drooping palpi, eyes only half

as wide as front, hind wing with Sc and R well separated though parallel and connected by a strong cross vein, and fore wing angled at M_3 instead of M_1 as normal in *Apatelodes*. Transparent subapical spot below M_1 stronger than the one above, unlike normal *Apatelodes*, but agreeing with *Olceclostera*.

Male genitalia normal in size and general structure, with no special features of the Eupterotinae; tegumen and vinculum separated by a long oblique suture, as in other Apatelodinae, the vinculum running up anterior to the tegumen; uncus a massive oblong structure, with slightly bifid apex, loosely articulated to tegumen; gnathos heavy with two dorsal terminal lobes, the articular part almost free from the rest, and forming flaps intercalated between tegumen and uncus on each side; vinculum normal, slender, without distinct saccus; valves complex, the articular process strong, with a large densely hairy costal lobe above it, sacculus slightly chitinized, not well set off but with a large blunt free apex; juxta essentially a flat plate, with a hole for the aedoeagus, the loop surrounding the aedoeagus (anellus) slender; aedoeagus with a single external spine at apex. Eighth segment nearly simple, but midventrally with a pair of small teeth.

At present this genus includes only „*Andraca*“ *albilunata*, which differs in almost every point from the remaining species of *Andraca*. The double forking of Rs will separate it from all other old world genera known to me, and is exactly as in *Apatelodes* and related genera, from which the weak palpi and small eyes will instantly separate it. The angle of the fore wing at M_3 agrees with *Quentalia*, which however has a much more complexly modified eighth sternite. The fully developed frenulum and hook agrees with the normal Apatelodinae, but also with primitive members of the other related groups; *Andraca* itself is figured by HAMPSON as lacking a frenulum (*Fauna of British India, Lep. Het.*, vol. 1, p. 40, fig. 23).

KEY TO GENERA OF THE EUPTEROTIDAE (MALE GENITALIA)

Except the New World Apatelodinae

1. Valve not developed as such; represented by a minute chitinous spike and two membranous flaps on each side (Panacelinae) *Panacela*
- Valve normal or the two valves fused mid-ventrally 2
2. Valve armed on inner face with a heavy hook on the short sacculus, connected by an oblique inner ridge to a ridge at base of costa; tegumen set off from uncus by a pair of inner ridges which converge to anterior middorsal line (Prismostictinae) *Prismosticta*
- Armature of valve essentially external and marginal, with no chitinous bar or ridge crossing inner face toward base; tegumen when distinct from uncus separated by a transverse suture well out 3
3. Articulation of tegumen and vinculum fully formed, long and oblique (Apatelodinae) *Sesquiluna*
- Articulation of tegumen and vinculum transverse when visible (Eupterotinae) 4
4. Tegumen and uncus more or less heavily chitinized, almost always with two subdorsal processes 5
- Tegumen and uncus wholly membranous, or short and simple with small

- amorphous chitinizations (Phialini) 29
5. Uncus proper of two short, divergent massive hairy lobes (Tissangini) *Tissanga*
- Uncus bearing two or four subdorsal processes, cleft on middorsal line, or forming a single bulging chitinized mass 6
6. Juxta fused to aedoeagus or valves or (usually) both, limiting their motion (most Eupterotini and *Cotana*) 16
- Valves, aedoeagus and juxta entirely free, the aedoeagus sliding on the juxta and valves capable of opening widely 7
7. No suture between tegumen and vinculum; and rarely between tegumen and uncus; juxta flat or sheathing the aedoeagus (Janini) 8
- Suture of tegumen and vinculum distinct (though occasionally incomplete) save in *Poloma*, which has a broad open V-shaped juxta; suture of tegumen and uncus always traceable, usually movable (Eupterotini in part) 13
8. Gnathos represented by a transverse sclerite, with a tuft of heavy spines at each end; saccus cylindrical, about as thick as aedoeagus 9
- Gnathos absent; saccus of other types, normally thick and V-shaped, with membranous center 10
9. Processes on uncus flat, ribbon-like, pubescent; juxta a flat transverse plate *Camerunia*
- Processes normal, long, cylindrical and curved; juxta semicylindrical, partly wrapped around aedoeagus, ending in two processes *Hemijana*
10. Area on each side of aedoeagus with a chitinized area rising into a vertical keel and pubescent; usually connected across mid-line by a strip of thin chitin (transtilla ?) 11
- This area with a simple knob and tuft of hairs or purely membranous 12
11. Tegumen-uncus with a long process in middorsal line, ending in a pair of lobes *Epijana*
- Tegumen short on middorsal line, but with paired processes of varied type on either side *Stenoglène*
12. Tegumen-uncus in the form of a large irregular sclerotized area, semimembranous middorsally and bearing a pair of slender subdorsal processes *Hoplojana*
- Tegumen-uncus short in middle line, simple save for normal subdorsal processes, sometimes even obsolete in mid-line *Jana*
13. Gnathos forming a large lobe in mid-line 14
- Gnathos a slender rod, extending down from uncus-base to articulation of valve, then across mid-line *Pseudojana*
- Gnathos represented by a separate bar from uncus-base to valve on each side; juxta obsolete *Apha*
14. Tegumen fused to uncus, with only a partial suture, and completely fused to vinculum (African) *Poloma*
- Tegumen movably articulated with uncus, and with distinct transverse suture separating it from vinculum 15
15. Gnathos pointed and more or less hooked at end *Apona*
- Gnathos broadly rounded *Ganisa*

16. Sacculus a slender free spine, wrapped in the folds of the largely membranous valvula *Pseudoganisa*
 — Sacculus not a free spine; valvula not deeply grooved 17
17. Juxta a wide-open V, the aedoeagus fully free to slide on it *Parajana*
 — Juxta continued apically into a broad sheet of chitin, which is recurved and immovably fused with aedoeagus, limiting its motion 18
18. Gnathos a well-developed free lobe; valve with well developed costal sclerite, reaching apex and distinguishable its whole length from residue of valve *Melanothrix*
 — Gnathos represented by a pair of large side-plates only; valve simple, fully articulated *Preptos*
 — Gnathos a vague chitination in the membrane between anal tube and aedoeagus or absent; valve of other types, typically mostly membranous at base of costa, save perhaps for a slender articular sclerite, valvula ending in a free chitinated tooth or lobe, and sacculus with modification of ventral edge 19
19. Tegumen-uncus with a pair of usually triangular subdorsal marginal processes 21
 — Tegumen and uncus without posterior processes from margin 20
20. Tegumen and uncus easily distinguished, the former with a pair, the latter with a single large bulge; no subdorsal processes at all *Striphnopteryx*
 — Tegumen and uncus nearly fused, with only traces of the bulges; a spine arising from the membrane beneath them on each side *Phyllalia*
21. Posterior edge of sacculus with a striate area (in *Sph. patula* replaced by a process with dentate apical edge) 25
 — Posterior edge of sacculus with a chitinous nodule, but not striate or dentate 22
22. Valve with one or two free or nearly free sclerites on apical margin; saccus broad and flat, though fully chitinated, much wider than aedoeagus *Palirisa*
 — Valve without free or nearly free apical sclerites, normally with a single apical process (sometimes forked) and the single dorsal chitinated angle of sacculus
23. Saccus massive, much wider than aedoeagus; valve with a terminal spherical concavity, flanked by the apical and sacculus teeth (Cotanini) *Cotana*
 — Saccus not wider than aedoeagus, usually much more slender; concavity between the two teeth irregular, frequently lined with membrane 24
24. Processes of sacculus far toward base, cut off transversely and closely related to the portions of valves which are fused to juxta and to each other *Marmaroplegma*
 — Processes far out, rounded, wholly independent and pubescent ... *Janomima*
25. Striate area limited to outer portion of sacculus, small or borne on a separate process; uncus and tegumen with paired dorsal humps; valves wholly articulated to ring and each other, though capable of but little motion *Sphingognatha*
 — Striate area continued along almost to point where valves fuse; valves continuous with each other ventrally, with a curved ventral line, and frequently

- fused indistinguishably with ring also, dorsal bulges of tegumen and uncus less conspicuous or absent 26
26. Uncus lobes sharply angled, with apical portion vertical 27
- Uncus lobes evenly curved, the whole dorsal surface smooth and even, without special vestiture 28
27. Uncus lobes with posterior contour smooth; with hairy tufts at bases of lobes; a membranous strip at base of valves setting off about half of articulation and a short swollen lateral gnathos-lobe; valvula normal *Dreata*
- Uncus lobes with slight humps at base, but the vestiture-hair not specialized on them; the area between the lobes extended posteriorly, showing a sharp crest in side view; apices of valves somewhat hooked, with little membrane below them, and ending in a diagonal ridge *Nisaga*
28. Apex of valve a single point, usually blunt, pointing inward and backward, with a ventral area of membrane between it and rest of valve *Eupterote*, *Tagora* (*Mallarctus*), *Sarmalia*
- Apex of valve a double structure, with an inner apex pointing out, and an outer folded under; the ventral surface below it deeply dished in, without extensive membrane *Messata* (with *Sangatissa*)
29. Tegumen-uncus typically a continuous though rather indefinite lightly chitinized plate; saccus not much longer than height of ring, typically definitely shorter *Stibolepis*
- Tegumen-uncus represented by two small separate chitinous areas or wholly membranous; saccus nearly twice as long as height of ring *Phiala*, *Lichenopteryx*

Genera omitted (male not examined): *Bantuana*, *Brachytera* (doubtless like *Eupterote*), *Conventia*, *Drepanojana*, *Gonojana*, *Lasiomorphia*, *Melanergon* (♀ only known), *Neopreptos*, *Pandala* (probably same as *Marmaroplegma*), *Paracydas*, *Paraphyllalia*, *Paramarane* (probably not Eupterotid), *Schistissa*, *Trichophiala* (♂ unknown), *Urojana*.

SUPERFICIAL KEY TO GROUPS AND GENERA OF EUPTEROTIDAE MALES

[Except the New World Apatelodinae]

1. Eyes hairy (*Prismostictinae*) *Prismosticta*
- Eyes naked 2
2. R₄ and R₅ on a long stalk, forking off from the stalk R₂ and R₃ (which in the old-world form are also long-stalked) (*Apatelodinae*) *Sesquiluna* (etc.)
- R₄ and R₅ arising separately from the stalk of R₂ and R₃ (or R₃ when R₂ is lost), rarely shortly stalked together when R₂ is lost 3
3. M₃ and Cu₁ stalked in both wings (*Panacelinae*) *Panacela*
- M₃ and Cu₁ arising separately in both wings (*Eupterotinae*) 4
4. Hind or both wings with ldcv not longer than mdcv, commonly much shorter, more erect and straight, without a M-spur (Janini); hind tibia with four spurs 5
- Both wings with ldcv normally longer than mdcv, often much longer, in hind wing at least equally or more oblique, and normally more or less angled at attachment of lower or combined M-spurs; in doubtful cases (*Palirisa*) hind tibia with end-spurs only 15
5. R₁ arising before end of cell and not rejoining R-stem, rarely running into Sc; subcostal cell narrow, normal 6
- R₁ arising out of R-stem, or (by exception) arising separately and then rejoining R-stem or one of its branches, enclosing a very narrow accessory cell 11

6. Fore tibia with two terminal spines (not seen) *Catajana* (as described)
- Fore tibia with a single strong terminal spine *Hoplojana*
- Fore tibia unarmed 7
7. Frenulum vestigial or absent and hook absent 8
- Frenulum normal, working with a normal frenulum hook 9
8. Fore wing with middle discocellular vein erect and shorter than lower ... *Hemijana*
- Fore wing with mdcv oblique, angled and longer than ldcv, as on hind wing *Camerunia*
9. Mdcv much longer than ldcv in both wings and strongly oblique 10
- Mdcv and ldcv subequal in length in both wings, though mdcv is much more oblique in hind wing; upper angle of cell, and usually origin of R₁ also opposite origin of M₃ *Jana*
10. Large species with hind wing angled at Cu₁; fore wing with R₁ free from Sc, upper angle of cell opposite Cu₁; M₁ free in both wings *Acrojana*
- Small species with R₁ running into Sc or strongly anastomosing with it; hind wing not angled, though vaguely bent opposite M₃; M₁ stalked in both wings *Viana*
11. Vestiture of basal half of fore wing deep and shaggy; fore wing in male with upper half of outer margin nearly straight, apex in female minutely falcate *Epijana*
- Vestiture normal or thin 12
12. Hind wing angled at M₃ in male, bent in female 13
- Hind wing with outer margin rounded 14
13. Fore wing with M₁ arising out of the common radial stem, R₁+₃ from R₁ beyond its separation from R₅ *Urojana*
- Fore wing with R₁+₃ from the stalk of R₁+₅+M₁ before it divides ... *Gonojana*
14. Fore wing without white or iridescent markings *Stenoglene*
- Fore wing with white subapical spots and in the female with a broad iridescent blue-green patch *Drepanojana*
15. Spurs of mid-tibia spine-like, naked, much swollen at their bases, turned forward (Tissangini) *Tissanga*
- Spurs of mid tibiae normal 16
16. Both wings with M₂ connate or stalked with R-stem; fore wing with cell very short, cell R₁ about as broad as discal; R₁ arising from cell close to base and then closely parallel to Sc; hind wing with Sc and R completely fused at base, so far as examined (Cotanini) 42
- Both wings with M₂ well separated from R-stem, but M₁ sometimes stalked in one wing or the other; R₁ arising from cell at middle or beyond, rarely stalked (*Pseudoganisa*); cell R₁ slender 17
17. Fore and mid tibiae normally with terminal spines, or hind wing with Sc and R closely in contact and partly fused close to base, or fore wing with R₂ preserved, usually all three (Phialini) 38
- Fore tibia very rarely (*Nisaga*) and mid tibia never with a terminal spine, hind wing with Sc and R always perfectly distinct, often well separated with a connecting cross vein (Eupterotini) 18
18. Fore tibia with a strong terminal spine *Nisaga*
- Fore tibia unarmed 19
19. Eyes much narrower than front, with a narrow naked sclerite between them and the hairy portion of front; immaculate, usually yellow species, endemic to the Philippines *Sarmalia*
- Eyes about as wide as front or rather wider, with no naked strip of chitin in front of them 20
20. Hind wing angled at M₃, fore wing with R₁ long-stalked *Pseudoganisa*
- Hind wing rounded; R₁ from cell 21
21. Hind wing (and usually fore wing also) with M₁ arising separate from R 22
- Hind wing (and frequently fore wing) with R and M₁ stalked 29
22. Fore wing with upper dcv longer than mdcv and longitudinal 23
- Fore wing with udcv very short and oblique or vertical when present at all 24

23. Hind wing with M_1 and 2 arising separately from cell; Sc and R well apart, parallel along cell, the cross vein imperfect and not disturbing the direction of Sc *Janomima*
 — Hind wing with M_1 and 2 stalked, Sc with the base arched, connected to cell by a strong cross vein, then gradually diverging *Marmaroplegma*
 — Hind wing with M_1 and 2 separate; base of Sc apparently arched (normal species not seen) *Pandala*
24. Hind tibia with upper spurs 25
 — Hind tibia with end spurs only 27
25. Mdcv strongly bent and bearing the upper M-spur in both wings, strongly oblique in hind wing; African *Parajana*
 — Mdcv straight and vertical or oblique in both wings, the M-spurs (in the specimens examined) attached opposite M_2 ; Asiatic 26
26. Hind wing R and M_1 closely approximate at origin; rather small species *Ganisa*
 — Hind wing with mdcv oblique and as long as ldcv; a large species *Pseudojana*
27. Fore wing with M_1 stalked; Oriental species with bright or white coloring and very small bodies *Melanothrix*
 — Fore wing with M_1 well separated; heavy species with cryptic coloring 28
28. Both wings with mdcv very short and straight; African species *Striphnopteryx*
 — Both wings with mdcv longer and angulate, bearing the upper M-spur; Asiatic species *Sphingognatha (patula)*
29. Hind tibia with both pairs of spurs 30
 — Hind tibia with end spurs only (*Sphingognatha* incompletely examined) 32
30. Male antennae very large and plumose; fore wing with R_1 set back more than half as far as width of cell; opposite Cu_2 ; hind wing with Sc and basal part of cell widely separated *Apona*
 — Male antennae moderate; fore wing with R_1 arising close to end of cell, much beyond Cu_2 unless closure of cell is strongly oblique; hind wing with Sc and R closely parallel on basal half of cell, then divergent 31
31. Closure of cell of fore wing strongly oblique throughout, mdcv being oblique and angled; Oriental *Dreata*
 — Closure of cell of fore wing vertical on upper half, then moderately oblique, mdcv straight and vertical; African *Poloma*
32. Hind wing with Sc and R diverging sharply after the point where the cross vein connects them 33
 — Hind wing with Sc and R continuing parallel for a distance beyond where they are connected (or over middle part of cell if the closing vein is obsolete) 35
33. Hind wing with costal edge strongly arched, the distance between cell and edge at point of origin of R + M_1 much greater than width of cell; fore wing with M_1 normally free (figured as stalked by HAMPSON) *Apha*
 — Hind wing with costa less arched, the width of costal area hardly as great as width of cell; M_1 of fore wing stalked save in a few *Eupterote* 34
34. Palpi shorter as a rule, typically barely exceeding front; fore wing pattern with outer line extending to costa well before apex, rarely continued by a vague shade to apex, but then normal beneath *Eupterote*
 — Palpi upturned closely to middle of front; fore wing with strongly oblique outer line, the portion at least as far up as R_5 pointing toward apex *Tagora (Mallarectus)*
35. Hind wing with Sc and R closest to each other beyond middle of cell, more basally well separated, and connected by a strong cross vein; fore wing with R_1 arising practically at end of cell; palpi moderate and porrect *Phyllalia*
 — Hind wing with Sc and R close on basal third of cell, then gradually diverging; R_1 of fore wing arising further back, between Cu_1 and 2 or opposite Cu_2 36
36. Mdcv full as long as ldcv, sometimes much longer *Palirisa*
 — Mdcv about half as long as lower, but bearing the M-spurs save in fore wing of *styx* 37
37. Palpi heavy, closely upturned beyond middle of front *Sphingognatha*
 — Palpi short and drooping *Messata (Sangatissa)*
38. Fore leg unarmed; R_2 preserved 39

- Fore and middle legs with terminal spines; frenulum vestigial (*Phiala*) 41
- 39. Wings plain, with a single postmedial line only *Teratojana*
- Fore wing with markings of other types 40
- 40. Frenulum (♀ only known) lost *Trichophiala*
- Frenulum (♂ only known) fully functional *Lichenopteryx*
- 41. R₂ always lost; hind wing with base of Sc and R completely distinct, connected by a cross vein at $\frac{1}{4}$ costal length of cell, moderately arched (R changing direction by less than 45°); costal edge slightly arched, the rise being less than the height of the frenulum-base (*Stibolepis*)
- R₂ often preserved; hind wing base highly arched, vein R being curved decidedly more than 45°, and the margin rising much more than height of frenulum-base; Sc and R partly fused at $\frac{2}{5}$ costal length of cell (*Phiala*)
- 42. M₂ shortly stalked with R-stem in both wings *Cotana*
- M₂ only connate with R stem (not seen) *Paracydas*
- M₂ reported as absent, presumably long- stalked on the R-stem, and with one of the radial branches absent (not seen) *Melanergon*

GEOGRAPHICAL SUMMARY

The genera marked with an asterisk (*) are also found in the eastern Palaearctic area.

Oriental: *Melanobrix*, *Apha**, *Apona**, *Ganisa* (* Kashmir*), *Pseudojana*, *Pandala*, *Dreata*, *Sphingognatha*, *Palirisa*, *Tagora*, *Mallarctus*, *Eupterote**, *Messata* (* Kashmir), *Nisaga*, *Prismosticta**, *Sesquiluna*.

Philippine Islands, specifically: *Melanobrix*, *Pseudoganisa*, *Eupterote*, *Sarmalia*.

Australasian (mostly New Guinea): *Sphingognatha*, *Lasiomorphba*, *Melanergon*, *Cotana*, *Paracydas*, *Panacela*.

Ethiopian: *Hoplojana*, *Jana*, *Acrojana*, *Viana*, *Camerunia*, *Hemijana*, *Catajana*, *Epijana*, *Urojana*, *Stenoglene*, *Gonojana*, *Drepanojana*, *Tissanga*, *Parajana*, *Metajana*, *Poloma*, *Janomima*, *Cyrtojana*, *Marmaroplegma*, *Striphnopteryx*, *Phyllalia*, *Schistissa*, *Lichenopteryx*, *Paraphyllalia*, *Bantuana*, *Trichophiala*, *Stibolepis*, *Phiala*.

American: *Preptos*, *Neopreptos*, *Apatelodinae* (not discussed).

CATALOGUE OF GENERIC NAMES OF EUPTEROTIDAE

I believe this catalogue of generic names is practically complete, though in the absence of any general catalogue certainty is out of the question. The genotypes cited are the oldest fixations I have found, but early fixations in the Lepidoptera have been so generally ignored by later workers that some have probably been missed. The names discussed in this paper are listed in the order of discussion.

EUPTEROTINAE — JANINI

Hoplojana Aurivillius, Ent. Tid., vol. 22, p. 120, 1901. Type: *H. indecisa* Auriv., l.c. (monotypic).

Jana Herrich-Schaeffer (Boisduval ms.) Samml. auss. Schmett. p. 17, 18, 70, figs. 98—100, 1856. Type: *J. euryamas* H. S., l.c. (designated by KIRBY 1892).

Acrojana Aurivillius, K. svensk. Vetensk.-Ak. Hndl., Bihang 27, ser. 4, no. 7, p. 25, 1901. Type: *A. sciron* Druce, Proc. Zool. Soc. 1887, p. 676 (1888), (designated in original description).

Viana Walker, in Chapman, Proc. N. H. Soc. Glasgow, vol. 1, p. 340, 1869. Type: *V. velutina* Wlk., l.c., p. 341 (monotypic). (Not *Viana* Adams 1856).

- Camerunia* Aurivillius, Ent. Tid., vol. 14, p. 211, 1893. Type: *C. insignis* Auriv., l.c., a synonym of *C. orphne* Schaus (monotypic).
- Hemijana* Aurivillius, K. svensk. Vetensk.-Ak. Handl. Bihang 27, ser. 4, no. 7, p. 21, 1901. Type: *H. subrosea* Auriv., l.c. (monotypic).
- Syn. *Catajana* Strand, Int. Ent. Zeit., vol. 4, p. 98, 1910. Type: *Dreata bimaculata* Dewitz, Mitt. Münch. Ent. Ver., vol. 3, p. 33, pl. II, fig. 5, 1879 (monotypic).
- Epijana* Holland, Psyche, vol. 6, p. 514, 1893. Type: *E. lanosa* Holl. l.c., a synonym of *E. cosima* Plötz (designated in original description).
- Drepanojana* Aurivillius, Ent. Tid., vol. 14, p. 212, 1893. Type: *D. fasciata* Auriv., l.c. (monotypic).
- Stenoglene* Felder, Reise Novara, Lep., pl. 95, figs. 3, 4, 1874. Type: *S. bilaris* Felder, l.c., fig. 3. (designated by KIRBY, 1892).
- Syn. *Phasicnecus* Butler, Proc. Zool. Soc., 1894, p. 585. Type *P. gregorii* Btl., l.c. (designated by AURIVILLIUS 1901).
- Gonojana* Aurivillius, Ent. Tid., vol. 14, p. 212, 1893. Type: *G. dimidiata* Auriv., l.c. (monotypic).
- Urojana* Gaede, Int. Ent. Zeit., vol. 9, p. 73, 1915. Type: *U. aborea* Gaede, l.c. (monotypic).
- Metajana* Holland, Proc. U.S. Nat. Mus., vol. 18, p. 765, 1896. Type: *M. chanleri* Holl., l.c. (monotypic). I cannot interpret the description of the venation in the original description. M₂ low in hind wing but high in fore wing could fit only the Janini, where the large size of abdomen and anastomosis of Sc and R₁ would be unique. Probably Lasiocampidae.

TISSANGINI

- Tissanga* Distant, Ins. Transvaal, vol. 1, p. 80, 1903. Type: *T. pretoriae* Dist., l.c. (monotypic).

EUPTEROTINI

- Melanothrix* Felder, Reise Novara, Lep., pl. 94, fig. 2, 1874. Type: *M. pulchricolor* Fld., l.c., a synonym of *Gnophos*? *nymphaliaria* Walker, List Lep. Ins. Br. Mus., vol. 35, p. 1598, 1866 (monotypic).
- Lasiomorpha* Joicey & Talbot, Trans. Ent. Soc. London, 1915, p. 384. Type: *L. noakesi* J. & T., l.c. (monotypic and designated in original description). (*Lasiomorpha* Turner 1932 is a homonym).
- Apha* Walker, List Lep. Ins. Br. Mus., vol. 5, p. 1180, 1855. Type: *A. subdives* Wlk., l.c. (monotypic).
- Synonym? *Preptothauma* Draudt, Ent. Rundschau, vol. 48, no. 11, p. 121, 1931. Type: *P. oxydiata* Ddt., l.c. (monotypic).
- Apona* Walker, List Lep. Ins. Br. Mus., vol. 7, p. 1762, 1856. Type: *A. pallida* Wlk., l.c., a synonym of *Gastropache caschmirensis* Kollar in Hügels Reise Kaschmir, vol. 4, p. 472, pl. 21, fig. 4, "1842" (1844, according to SHERBORN).
- Syn. *Pachyclea* Gistel, Vacuna, vol. 2, p. 91, 1857, Type: *caschmirensis* Kollar, l.c. (according to STRAND, Arch. Naturg., 1916, vol. A5, p. 100.)
- Preptos* Schaus, Proc. Zool. Soc., 1892, p. 318. Type: *P. oropus* Schaus, l.c. (monotypic).
- Neopreptos* Draudt, Macrolep. World, vol. 6, p. 790, 1930. Type: *Coloradia clazomenia* Druce, Biol. Centr.-Am., vol. 1, p. 173, pl. 16, figs. 3 ♂, 4 ♀, 1886 (designated in original description).
- Ganisa* Walker, List Lep. Ins. Br. Mus., vol. 5, p. 1190, 1855. Type: *G. postica* Wlk., l.c. (designated by HAMPSON, Fauna Br. India, Lep. Het. vol. 2, p. 49, 1892).
- Pseudojana* Hampson, Fauna Br. India. Lep. Het., vol. 1, p. 41, 48, 1892 [1893]. Type: *Jana incandescens* Walker, List Lep. Ins. Br. Mus., vol. 4, p. 1910, 1855 (monotypic).
- Parajana* Aurivillius, Ark. Zool., vol. 3, no. 1, p. 6, 1906. Type: *Jana gabunica* Auriv. Ent. Tid., vol. 13, p. 195, 1892. (designated in original description).
- Pseudoganisa* Schultze, Phil. Jour. Sci., vol. 5, ser. D, p. 162, 1910. Type: *P. currani*, Schultze, l.c. pl. 1, fig. 2 (monotypic).

- Poloma Walker, List Lep. Ins. Br. Mus., vol. 4, p. 858, 1855. Type: *P. angulata* Wlk., l.c. (monotypic).
- Janomima Aurivillius, K. svensk. Vetensk.-Ak., Handl., Bihang, vol. 27, ser. 4, no. 7, p. 9, 1902. Type: *Bombyx mariana* White, Ann. Mag. Nat. Hist., ser. 1, vol. 12, p. 264, 1843 (designated in original description by an asterisk).
- Cyrtोजना Aurivillius, Trans. Ent. Soc. London, 1911, p. 161. Type: *C. trilineata* Auriv., l.c. (monotypic).
- Marmaroplegma Wallengren, Wiener Ent. Mon., vol. 4, p. 166, 1860 (brief), K. svensk.-Ak. Forh. (n.f.), vol. 5, no. 4, p. 29, 1865 (formal). Type: *M. paragarda* Wall. l.c. (monotypic) [KIRBY makes this a synonym of *Rhabdosia* Hübner, using *P. vaninia* as type of the latter, but GAEDE refers the latter to *Pbiala*, which appears more probable from the original figure.]
- Pandala Walker, List Lep. Ins. Br. Mus., vol. 4, p. 921, 1855. Type: *P. dolosa* Wlk., l.c. (monotypic). [This genus and species are omitted from SEITZ' text (pl. 36 fig. e4), but discussed and figured in the Fauna of Brit. India. I suspect *Marmaroplegma* is only a subgenus of it.]
- Palirisa Moore, Trans. Ent. Soc. London, 1884, p. 360. Type: *Jana lineosa* Walker, List Lep. Ins. Br. Mus., vol. 4, p. 912, 1855 (designated in original description).
- Dreata Walker, List Lep. Ins. Br. Mus., vol. 4, p. 902, 1855. Type: *D. bades* Wlk., l.c. (designated by BUTLER in Ill. Lep. Het. Br. Mus., vol. 5, p. 69, 1881). [He implies there is an earlier designation of *edulis* as type, which he rejects; I have not been able to trace it, and *bades* represents the customary use of the genus name.]
- Sphingognatha Felder, Reise Novara, Lep., pl. 94, fig. 1, 1874. Type: *Tagora pallida* Walker, List Lep. Ins. Br. Mus., vol. 5, p. 1189, 1855 (designated by KIRBY, in Cat. Lep. Het., p. 801, 1892).
- Syn. *Tagora* of authors according to invalid fixation of type of the latter.
- Eupterote Hübner, Verz. bek. Schm., p. 187 [1820]. Type: *Phalaena Attacus fabia* Cramer, Pap. Exot., vol. 3, p. 98, pl. 250, fig. B, 1782. (designated by MOORE, Lep. Ceylon, vol. 2, p. 140, 1892).
- Syn. *Brachytera* Felder, Reise Novara, Lep., pl. 95, figs. 1, 2, 1874. Type: *B. phalaenaria* Fld., l.c. fig. 1 (designated by KIRBY 1892) [Probably a good subgenus; for supposed differences from *Eupterote* see GRÜNBERG, in SEITZ, vol. 2, p. 187.]
- Syn. *Drepanojana* Bryk, not Aurivillius, Ark. Zool., vol. 35, ser. A, no. 8, p. 29, 1944. Type: *E. (D.) citheronia* Bryk, l.c. (designated in original description).
- Syn. *Horanpella* Moore, Lep. Ceylon, vol. 2, p. 143, 1882. Type: *H. placida* Moore, l.c. (designated in original description).
- Syn. *Leptojana* Butler, Ill. Lep. Het. Br. Mus., vol. 5, p. 68, 1881. Type: *Dreata lineata* Walker, List Lep. Ins. Br. Mus., vol. 4, p. 905, 1855 (monotypic).
- Syn. *Murlida* Moore, Cat. Lep. Mus. E. India C., vol. 2, p. 422, 1858; Trans. Ent. Soc. London 1884, p. 370. Type: *Lasiocampa lineosa* Walker, List Lep. Ins. Br. Mus., vol. 6, p. 1440, 1885 (monotypic).
- Syn. *Pachyjana* Butler, Ill. Lep. Het. Br. Mus., vol. 5, p. 69, 1881. Type: *Dreata undans* Walker, List Lep. Ins. Br. Mus., vol. 4, p. 905, 1855 (monotypic).
- Syn. *Spalyrja* Moore, Trans. Ent. Soc. London, 1884, p. 370. Type: *Bombyx collaris* Guérin, Delessert's Voyage, pl. 7, fig. 2, 1843 (designated in original description).
- Tagora Walker, List Lep. Ins. Br. Mus., vol. 5, p. 1188, 1855. Type: *T. glaucescens* Wlk., l.c. (designated by MOORE, in Lep. Ceylon, vol. 2, p. 142, 1882). Pseudotype: *T. patula* Wlk., l.c. (designated by HAMPSON in Fauna Br. India, Moths, vol. 1, p. 46, 1892). (See *Sphingognatha*).
- Syn. *Mallarctus* Mell, Deut. Ent. Zeit., 1929, p. 458. Type: *Tagora pandya* Moore (designated hereby. This is the species which MELL discusses fully, though he also cites *T. glaucescens* to the genus).
- Sarmalia Walker, List Lep. Ins. Br. Mus., vol. 5, p. 1945, 1866. Type: *S. radiata* Wlk., l.c. (monotypic).

- Messata Walker, List Lep. Ins. Br. Mus., vol. 5, p. 1107, 1855. Type: *M. rubiginosa* Wlk., l.c., p. 1108, a syn. of *Dreata plumipes* Wlk., l.c., vol. 4, p. 907 (designated by MOORE, Lep. Ceylon, vol. 2, p. 138, 1882).
- Syn. *Sangatissa* Moore, Lep. Ceylon, vol. 2, p. 143, 1883. Type: *S. curvifera* Mre., l.c. (monotypic).
- Nisaga Walker, List Lep. Ins. Br. Mus., vol. 4, p. 885, 1855. Type: *N. simplex* Wlk., l.c. (monotypic).
- Striphnopteryx Wallengren, Öfvers. Vet.-Ak. Förh., vol. 15, p. 209, 1858. Type: *S. edulis* Wallen. (designated in original description).
- Phyllalia Walker, List Lep. Ins. Br. Mus., vol. 6, p. 2494, 1855. Type: *P. concolor* Wlk., l.c., which is a synonym of *Bombyx patens* Boisduval, in Delagorgue, Voy. Afr. Austr., vol. 2, p. 599, 1847. (monotypic).
- Syn. *Homochroa* Wallengren, Öfvers. Vetensk.-Ak. Förh., vol. 15, p. 142, 1858. Type: *B. patens*, Boisduval, l.c. (designated in original description); Pseudotype: *H. valida* Felder, Reise Novara, Lep., pl. 93, fig. 6, 1874.
- Trichophiala Aurivillius, Öfvers. Svensk. Vet.-Ak. Förh., vol. 36, no. 7, p. 53, 1879. Type: *T. derylderi* Auriv. l.c. (monotypic).
- Teratojana Hering, Rev. Zool. Bot. Afr., vol. 29, p. 197, 1937. Type: *T. flavina* Hrg., l.c. (monotypic).
- Lichenopteryx Felder, Reise Novara, Lep., pl. 95, fig. 5, 1874. Type: *L. despecta* Fld., l.c. (monotypic).

COTANINI

- Cotana Walker, List Lep. Ins. Br. Mus., vol. 32, p. 548, 1865. Type: *C. rubrescens* Walker, l.c. (designated in original description).
- Syn. *Epicydias* Bethune-Baker, Nov. Zool., vol. 15, p. 175, 1908. Type: *E. ovata* B-Bkr., l.c. (monotypic and designated in original description).
- Syn. *Hypercydas* Turner, Proc. Royal Soc. S. Austr., vol. 27, p. 23, 1903. Type: *H. calliloma* Trn. (monotypic).
- Syn. *Nervicompressa* Bethune-Baker, Nov. Zool., vol. 11, p. 389, 1904. Type: *N. unistrigata* B-Bkr., l.c. (male of *C. rubrescens*) (designated in original description).
- Syn. *Neuroanomale* Bethune-Baker, Nov. Zool., vol. 15, p. 177, 1908. Type: *N. variegata* B-Bkr., l.c. (monotypic and designated in original description).
- Melanergon Bethune-Baker, Nov. Zool., vol. 11, p. 372, 1904. Type: *M. proserpina* B-Bkr. (monotypic and designated in original description).
- Paracydas Bethune-Baker, Nov. Zool., vol. 15, p. 176, 1908. Type: *P. biagi* B-Bkr., l.c. (monotypic and designated in original description).

PANACELINAE

- Panacula Walker, List Lep. Ins. Br. Mus., vol. 32, p. 546, 1865. Type: *P. rufescens* Wlk., l.c., a synonym of *Bombyx lewiniae* Lewin, Prodrom. Ent., p. 7, pl. 6, 1805. (monotypic).
- Syn. *Lewinibombyx* Strand, in Seitz, Macrolep. World, vol. 10, p. 381, 1929. Type: *B. lewiniae* Lewin, l.c. (monotypic).

PRISMOSTICTINAE

- Prismosticta Butler, Ann. Mag. Nat. Hist., ser. 5, vol. 6, p. 67, 1880. Type: *P. fenestrata* Btl., l.c. (monotypic).

APATELODINAE

- Sesquiluna Forbes, described in this paper, p. 121. Type: *Andraca albilunata* Hampson, Jour. Bombay Nat. Hist. Soc., vol. 20, p. 83, pl. F fig. 2, 1910. (monotypic and designated hereby).

REJECTED GENERA

The following genera which either certainly or probably belong to other families have in the past been put in the Old-world Eupterotidae or closely associated with them. For the accepted genera of New World Apatelodinae, SEITZ should be consulted.

- Amydona* Walker, List Lep. Ins. Br. Mus., vol. 6, p. 1413, 1855. Includes only names synonymic with *Trabala vishnu* (Lasiocampidae). Is also preoccupied by *Amydona* Walker, List Lep. Ins. Br. Mus., vol. 5, p. 1110, 1855, which is an Eucleid of the genus *Perola*. Type: *A. subpunctata* Wlk., l.c. (designated by KIRBY, 1892).
- Anchirithra* Butler, Cist. Ent., vol. 2, p. 297, 1878. Type: *A. insignis* Btl., l.c. (monotypic). BUTLER writes "Dreatae affinis", but this is a Lasiocampid, figured under this name in Seitz.
- Hondella* Moore, Lep. Ceylon, vol. 2, p. 144, pl. 137, fig. 4, 1882. Type: *Ptilomacra juvenis* Walker, List Lep. Ins. Br. Mus., vol. 5, p. 1099, 1855 (monotypic). A synonym of the Lymantriid genus *Laelia*.
- Metadula* Walker, List Lep. Ins. Br. Mus., vol. 32, p. 514, 1865. Type: *M. indecisa* Wlk., l.c. (monotypic). Compared with *Apha* and *Ganisa*, *Oxytenis* and *Antheraea*; it is pretty obviously a Saturniid, but does not appear in SEITZ or the *Lep. Cat.*
- Odontocheilopteryx* Wallengren, a Lasiocampid, described and figured in SEITZ.
- Olistheria* Hübner, Verz. Bek. Schm., p. 193, 1820. Type: *Phalaena Noctua zatima* Cramer, Pap. Exot., vol. 4, pl. 381, fig. F, 1787, an European Arctiid (designated by AURIVILLIUS). AURIVILLIUS queries his designation of the type; the other included by HÜBNER is an Eupterotid (*Pbiala vaninia*).
- Omestia* Bethune-Baker, Nov. Zool., vol. 15, p. 177, 1908. Type: *O. bella* B-Bkr., l.c. (monotypic and designated in original description). A Notodontid.
- Paramarane* Bethune-Baker, Ann. Mag. Nat. Hist. ser. 8, vol. 6, p. 449, 1910. Type: *P. pulchra* B-Bkr., l.c., p. 450 (monotypic and designated in original description). The description is valueless for placing and the pattern suggests *Epicoma* (*Marane*) (*Thaumetopoeidae*).
- Pseudodreata* Butler, Nov. Zool., vol. 11, p. 371, 1904. Type: *P. strigata* Btl., l.c. (monotypic and designated in original description). An Anthelid.
- Rarisquamosa* Butler, Ann. Mag. Nat. Hist., ser. 8, vol. 6, p. 450, 1910. Type: *R. arfaki* Btl., l.c. (Monotypic and designated in original description). The simple male antennae would be wholly out of place in the Eupterotidae.
- Sabalia* Walker, List Lep. Ins. Br. Mus., vol. 32, p. 547, 1865. Type: *S. picarina* Wlk., l.c. (monotypic). Generally considered to belong to the Lemoniidae.
- Syn. Conventia* Weymer, Berl. Ent. Zeit., vol. 41, p. 88, 1896. Type: *C. sericaria* Weym., l.c. (monotypic).
- Syn. Heteranaphe* E. Sharpe, Ann. Mag. Nat. Hist., ser. 6, vol. 5, p. 442, 1890. Type: *H. jacksoni* E. Sharpe, l.c. (monotypic).
- Syn. Hyperanaphe* Kirby, Cat. Lep. Het., p. 577, 1892. A slip for the preceding, without separate status.
- Sarothropyga* Felder, Reise Novara, Lep., pl. 100, fig. 23, and pl. 101, fig. 13, 1874. Type: *S. rhodopepla* Fld., l.c. (monotypic). A Lymantriid, synonym of *Lymantria modesta* Wlk.
- Spiramiopsis* Hampson, Trans. Ent. Soc. London, 1901, p. 191. Type: *S. comma* Hmps., l.c. (monotypic). Lemoniidae.